INDIA

RUBBER WORLD

MAY, 1945

Newsletter No. 5
MAY, 1945

Published by Rubber Chemicals Division of DU PONT

NEOPRENE

USE IT PROMPTLY—CARRY LOW INVENTORY

NEOPRENE processes best when reasonably fresh, but as it ages it becomes more plastic. Its rate of cure increases and it develops stickiness during processing. These changes are intensified during warm weather when the temperature of storage is elevated. Hence, it is important to use reasonably fresh neoprene.

Production of neoprene at Louisville, Kentucky, and at Carney's Point, New Jersey, is now controlled and adjusted to the existing demand and allows only for sufficient inventory to facilitate prompt shipment of orders. Rubber manufacturers can take advantage of this situation and will find that many processing difficulties can be avoided by adjusting purchases so that the amounts of inventory carried at their manufacturing points do not exceed a three weeks' working supply. This procedure will be especially important during the summer months.

Both GR-M and GR-M-10 are produced at Louisville, Kentucky. GR-M-10 contains 1% of an antioxidant stabilizer (not present in GR-M) and, although it softens with age almost as much as GR-M, it does not develop nearly so much undesirable stickiness. For many applications, especially in calendering and extruding, GR-M-10 is preferred to GR-M because of its better processing. Because it contains an antioxidant, it darkens on exposure to light. GR-M-10 is recommended for any use except in white and light-colored stocks or in contact with goods which are sensitive to staining by the presence of an antioxidant. If you are not using GR-M-10, investigate it now and plan to use it this summer.

To maintain good processing neoprene stocks:

1. Order only as much neoprene as you will use.
2. Carry a minimum inventory.
3. Use oldest lots first.
4. Use GR-M-10 especially for difficult processing jobs, except if white or light-colored.

NEOPRENE GR-M AND GR-M-10 are supplied by Rubber Reserve Company, Louisville, Kentucky. Purchase permits from Rubber Reserve Company, Washington, D. C., are required.

NEOPRENE TYPES E, M, FR, KNR, and LATEX are supplied by Rubber Chemicals Division of E. I. du Pont de Nemours & Company (Inc.), Wilmington 98, Delaware. For these, orders certified under Rubber Order R-1 are required. No purchase permits are needed.

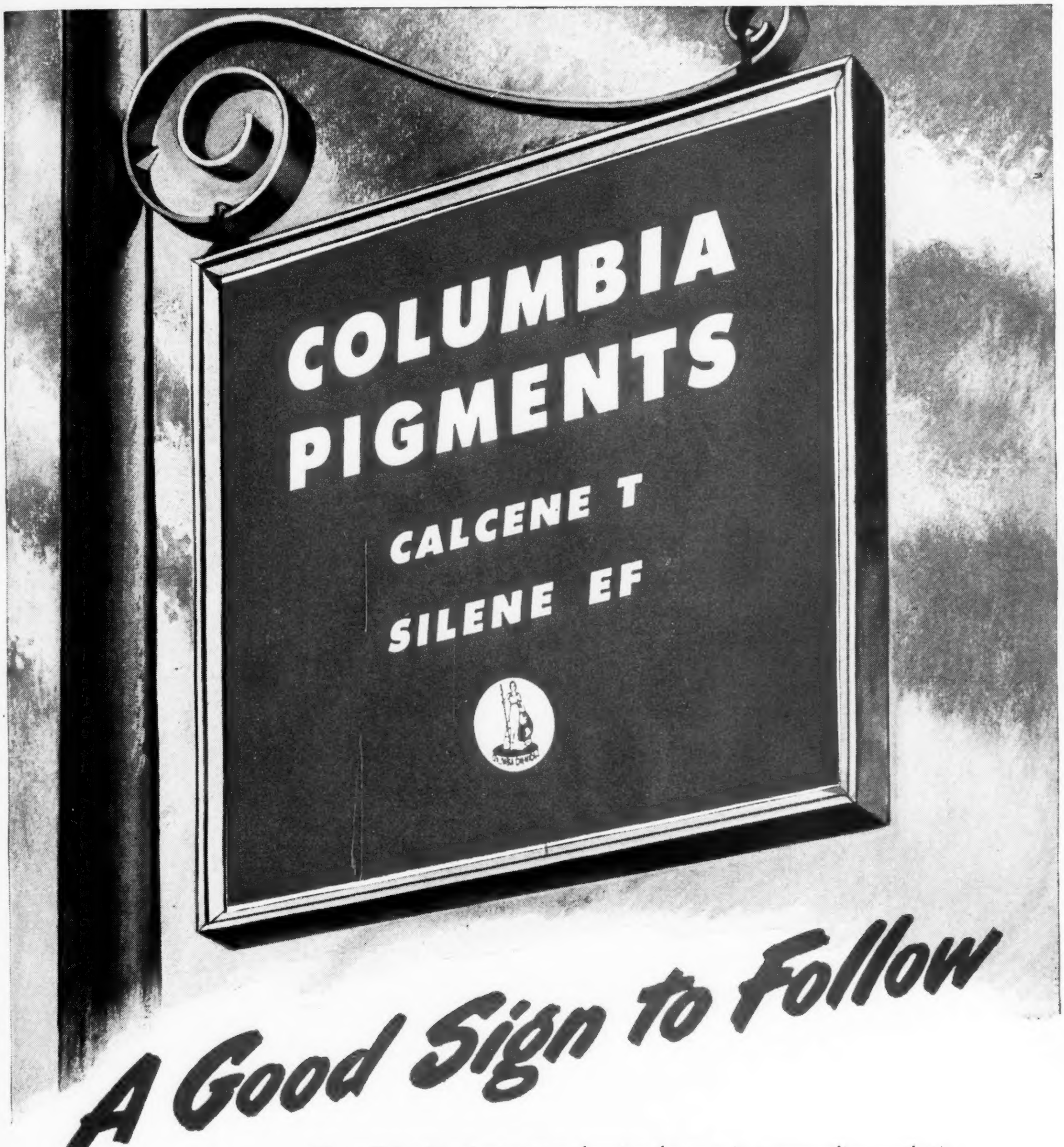
BACK THE ATTACK WITH WAR BONDS

DU PONT

RUBBER CHEMICALS DIVISION

BETTER THINGS FOR BETTER LIVING . . . Through Chemistry

INDIA RUBBER WORLD, May, 1945, Vol. 112, No. 2. Published monthly by BILL BROTHERS PUBLISHING CORP., 386 Fourth Avenue, New York 16, N. Y., U. S. A. Entered as second-class matter December 27, 1944, at the Post Office at New York, N. Y., under the Act of March 3, 1879. Subscription, United States and Mexico, $3.00 per year; all other countries, $4.00; single copies, 35 cents.



These Columbia pigments are showing the way in compounding synthetic rubbers requiring resistance to tear and abrasion, tensile strength, various degrees of hardness, and other desirable properties. Data on Calcene T and Silene EF will be furnished on request.

COLUMBIA CHEMICALS

PITTSBURGH PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING • PITTSBURGH 19, PA.

CHICAGO • BOSTON • ST. LOUIS • PITTSBURGH • NEW YORK • CINCINNATI • CLEVELAND
PHILADELPHIA • MINNEAPOLIS • CHARLOTTE • LOS ANGELES

PHILBLACK A . . . *for Work-a-b-i-l-i-t-y*

plus a snappy comeback!

Just a little Philblack A substituted for a portion of the other blacks in a given stock makes a whale of a difference! Philblack A improves extrusion . . . gives greater smoothness . . . steps up pliancy . and *peps up resilience!*

Those are just a few of the reasons why Philblack A is being widely used in the manufacture of tires: for carcass side wall and tread. Philblack A also combines high reinforcement and low hysteresis with excellent abrasion resistance.

These outstanding features of Philblack A have been demonstrated in the laboratory, *and . . . they have also been proved on the road!* Yes sir! Many successful tests with a number of different fleets have proved these outstanding qualities of Philblack A!

PHILLIPS PETROLEUM COMPANY

Philblack Division

FIRST CENTRAL TOWER · AKRON, OHIO

NAUGATUCK CHEMICALS for GR-S

PROCESSING AIDS

LAUREX - BWH #1

ACCELERATORS

BJF - MBT - MBTS - OXAF
MONEX - TUEX

BEUTENE - HEPTEEN BASE - TRIMENE BASE
ETHAZATE - METHAZATE - BUTAZATE
CPB - ZBX

ANTIOXIDANTS

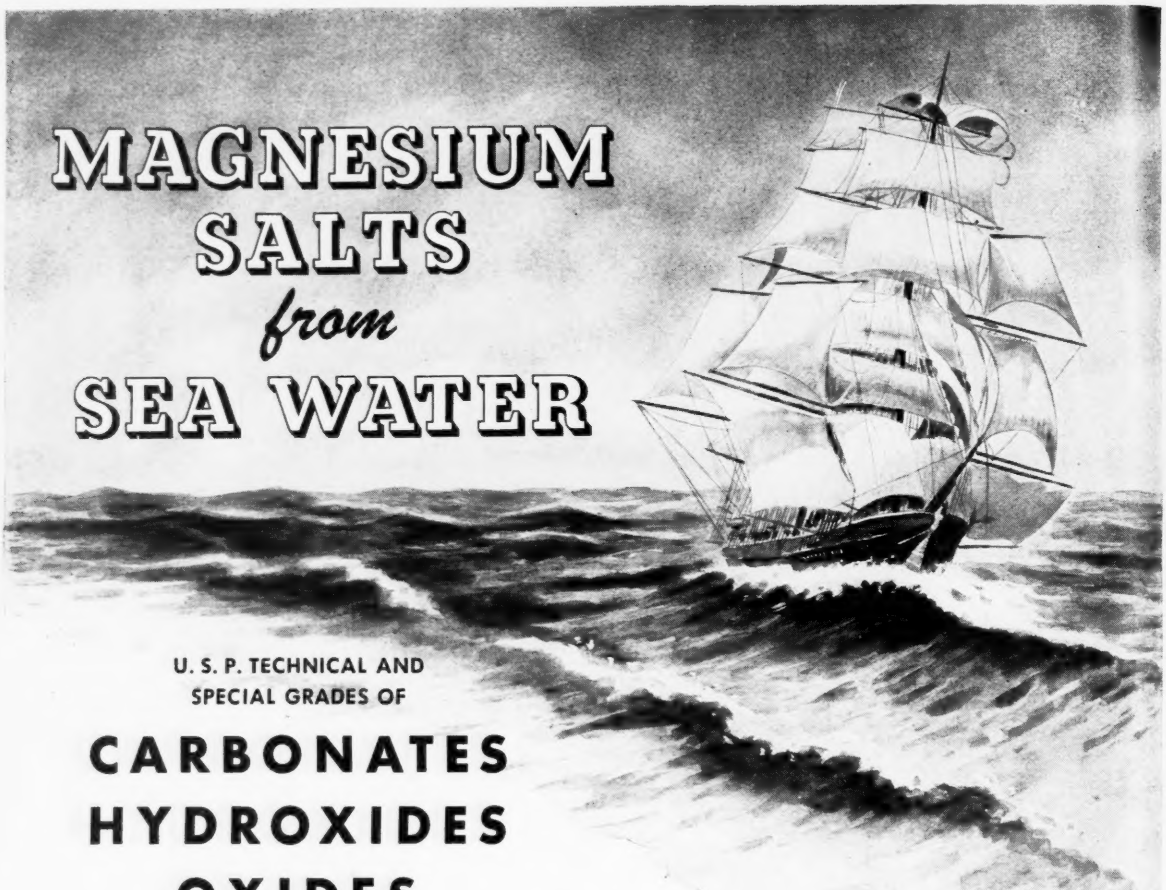
BLE - BLE POWDER - AMINOX

Process Accelerate Protect
with NAUGATUCK CHEMICALS

Naugatuck Chemical

DIVISION OF UNITED STATES RUBBER COMPANY
ROCKEFELLER CENTER NEW YORK 20, N. Y.

IN CANADA: Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ont.



MAGNESIUM SALTS *from* SEA WATER

U. S. P. TECHNICAL AND
SPECIAL GRADES OF

CARBONATES
HYDROXIDES
OXIDES

for

PHARMACEUTICAL
COSMETIC
FOOD
RUBBER
PRINTING INK
PAINTS & VARNISHES
CHEMICALS

MARINCO BRAND

Main Office, Plant and Laboratories
SOUTH SAN FRANCISCO, CALIFORNIA

Distributors
WHITTAKER, CLARK & DANIELS, INC.
NEW YORK: 260 West Broadway
CHICAGO: Harry Holland & Son, Inc.
CLEVELAND: Palmer Supplies Company
TORONTO: Richardson Agencies, Ltd.

G. S. ROBINS & COMPANY
ST. LOUIS: 126 Chouteau Avenue

MARINE MAGNESIUM PRODUCTS CORPORATION

Original Producers of Magnesium Salts from Sea Water

© 1945, Marine Magnesium Products Corp.

Photo Courtesy of J. P. Kelley Brass Foundry

ANOTHER TOUGH PROBLEM LICKED; ANOTHER GROUP OF SATISFIED CUSTOMERS

The rubber industry, with the help of the metal working men, uncovered another important industrial application for Hycar when natural rubber no longer could be used as a bonding material for abrasive wheels. In the search for a "substitute" Hycar was found to be *twice as good.* In a typical comparative test a natural rubber-bonded wheel was good for 50 cuts on manganese bronze castings for a total of 562 square inches. A Hycar-bonded wheel under identical conditions made 99 *cuts for a total of 1013 square inches.*

Hycar has a habit of tackling—and licking—the hard jobs. That's why men in the rubber industry turn to Hycar when there's a tough problem to be solved and a tough customer to be satisfied. Engineers and design men throughout industry—your present customers and customers-to-be—every day see evidence that Hycar can consistently outperform other synthetic rubbers in difficult or routine applications. Knowing that, wouldn't it be wise for you to take advantage of this steadily increasing acceptance? You'll gain if you make Hycar the standard special-purpose rubber in your plant.

For help in any phase of your synthetic rubber work—compounding or processing—new ideas or old applications—tough problems or routine production—please call on Hycar's Technical Service Staff. *Hycar Chemical Company, Akron 8, O.*

Our new booklet, "Everywhere in Industry", is being distributed to engineers, designers, and manufacturers in many different fields. We will be glad to furnish a copy for each member of your sales force—it will help them make better sales that will insure satisfied customers. Just let us know how many you need.

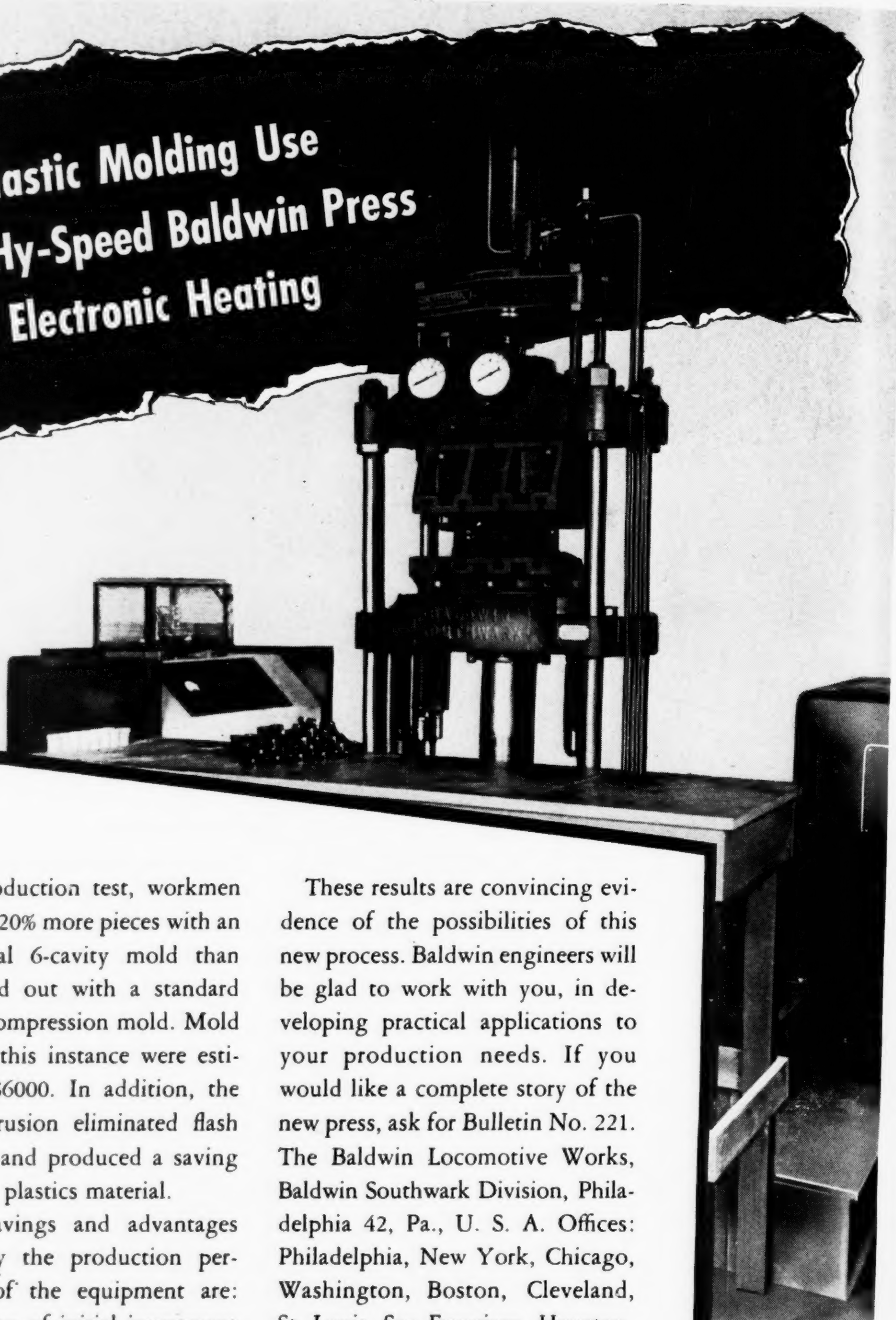
Hycar

Reg. U. S. Pat. Off.

LARGEST PRIVATE PRODUCER OF BUTADIENE TYPE

Synthetic Rubbers

For Plastic Molding Use This Hy-Speed Baldwin Press with Electronic Heating



In one production test, workmen turned out 20% more pieces with an experimental 6-cavity mold than were turned out with a standard 24-cavity compression mold. Mold savings in this instance were estimated at $6000. In addition, the precise extrusion eliminated flash and sprue, and produced a saving of 12½% in plastics material.

Other savings and advantages revealed by the production performance of the equipment are: (1) reduction of initial investment through use of a smaller press; (2) less wear on molds, permitting use of more easily hobbed materials, and extending mold life; (3) considerable reduction in finishing.

These results are convincing evidence of the possibilities of this new process. Baldwin engineers will be glad to work with you, in developing practical applications to your production needs. If you would like a complete story of the new press, ask for Bulletin No. 221. The Baldwin Locomotive Works, Baldwin Southwark Division, Philadelphia 42, Pa., U. S. A. Offices: Philadelphia, New York, Chicago, Washington, Boston, Cleveland, St. Louis, San Francisco, Houston, Pittsburgh, Detroit.

BLW THE BALDWIN GROUP

BALDWIN

HYDRAULIC PRESSES

In your plant . . .

NAFTEX for SPEED, CLEANLINESS, EASE OF HANDLING

REG. U. S. PAT. OFFICE

NAFTEX is a unique material—a combination of carbon black and sulfur-reactive plasticizer in the form of free-flowing clean pellets. It is backed by two years of intensive development-aimed at solving some of your most difficult factory handling and processing problems. NAFTEX is a proven product used in large-scale factory production. If you are using SRF or HMF carbon black, NAFTEX can help you.

WHAT NAFTEX WILL DO FOR YOU

1. It will make your factory cleaner. *NAFTEX reduces carbon black dust.*

2. It will increase your mill capacity. *NAFTEX appreciably reduces time of incorporation.*

3. It will eliminate the handling of plasticizers of the viscous-liquid type. *NAFTEX is a dry free-flowing product in pellet form.*

4. It will eliminate the storage, handling, and return of steel drums. *NAFTEX comes in multi-wall paper bags.*

5. It will improve your labor relations. *NAFTEX is liked by the man in the factory.*

THREE TYPES OF NAFTEX ARE NOW AVAILABLE:

NAFTEX SRF 67—⅔ SRF Carbon Black and ⅓ Sulfur-Reactive Plasticizer.

NAFTEX SRF 75—¾ SRF Carbon Black and ¼ Sulfur-Reactive Plasticizer.

NAFTEX HMF 67 – ⅔ HMF Carbon Black, ⅓ Sulfur-Reactive Plasticizer.

Write for samples.

• • •

WILCHEM PRODUCTS: NAFTOLEN • NAFTEX MULTI-PLAST • ECONO-PLAST • NAFTOLEN EMULSION • WILMEX • WILCOR RECLAIMING OILS • POLY-TINT

The booklet, "TENSILE STRENGTH TABLE," designed as an aid in your physical testing laboratory is available. Write for your copy.

W C=C
REG. U. S. PAT. OFFICE

WILMINGTON
CHEMICAL CORPORATION

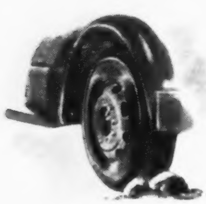
10 EAST 40TH STREET • NEW YORK 16, N. Y.

7 IMPORTANT FACTS

Source: ***Hearings before a Special Committee Investigating the National Defense Program. United States Senate—Seventy-eighth Congress, First and Second Sessions.***

1

The Army and Navy use rayon-cord tires for their combat and transport planes. They're lighter, safer, stronger.

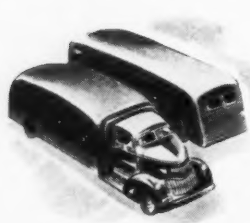


2

Army tests on larger synthetic tires showed rayon 93% better for rough cross-country terrain, where bruising and cutting are principal problems.

3

Army tests also showed rayon to be 330% better on long distance supply work, where heat and sustained operation are principal problems. (Note: conclusive as both these tests were, there is no guarantee of the same results in other conditions of service.)



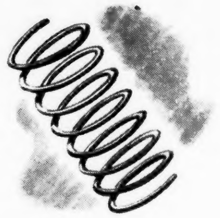
4

Most inter-city bus operators have used rayon exclusively for five years. Tests on commercial truck tires made of rayon showed one-half as many impact failures at 37% more mileage.

5

Friction heat is materially less in tires made of rayon cord. Friction heat eats up rubber . . . weakens tires.

about Rayon-Cord Tires



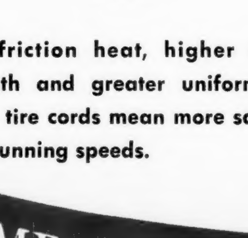
6

Rayon tire cord retains more tensile strength at high running temperatures. Like spring steel, it can stand an almost infinite amount of flexing.

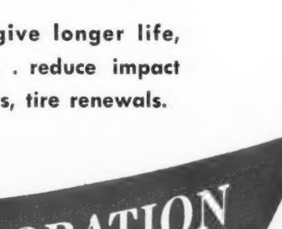
7

Rayon is man-made . . . therefore its physical properties are uniform and can be scientifically controlled.

MORE SAFETY



LESS OPERATING COST



Less friction heat, higher tensile strength and greater uniformity of rayon tire cords mean more safety at high running speeds.

Rayon-cord tires give longer life, greater mileage . . . reduce impact failures, road delays, tire renewals.

AMERICAN VISCOSE CORPORATION

America's Largest Producer of Rayon Tire Cord, Yarn, and Staple Fiber

Sales Offices: 350 Fifth Avenue, New York 1; Providence, R. I.; Charlotte, N. C.; Philadelphia, Pa.
Plants at: Marcus Hook, Pa.; Roanoke, Va.; Parkersburg, W. Va.; Lewistown, Pa.; Meadville, Pa.; Nitro, W. Va.; Front Royal, Va.

SPECIAL DEVELOPMENTS
for WAR and INDUSTRY
in
SYNTHETIC LATEX

2 New Compounds for...

PAPER

ARMY-NAVY ORDNANCE WRAP

To meet the rigorous specifications of the joint ARMY-NAVY procurement agency for greaseproof ordnance wrapping paper, General Latex has developed a synthetic latex-base adhesive for laminating cellulose acetate or cellophane to kraft paper.

The most critical features for this adhesive are:

1. *Neutral* (water-extract between 6.5 and 7.5 pH). Ordinary synthetic latex adhesives are alkaline and other commonly used compounds are acid.
2. *No delamination* after: 7 days at 140° F; 112 hours in Fadeometer; 8 days in oxygen bomb.
3. *Cost* per dry pound and on a mileage basis significantly lower than adhesives now in current use for this purpose.

Available either uncolored or dyed red for immediate application.

TEXTILES

QUARTERLINING AND LEATHER SUBSTITUTES

This new synthetic adhesive provides an effective undercoat for lacquer on rubber-impregnated textiles in ladies' shoes and other products requiring a high-grade leather substitute.

It minimizes discoloration of the lacquer and reduces migration of the lacquer plasticizer. Available as an aqueous dispersion ready for use.

A practical approach to the use of synthetic dispersions in your product is to refer your problem to our laboratory. No matter what the process — coating, impregnating, or bonding — our experienced technical staff specializes in compounding the material best suited to your requirements.

GRS latex types, 2, 3 and X-160, normal and concentrated, available from stock.

A Complete Service to Manufacturers

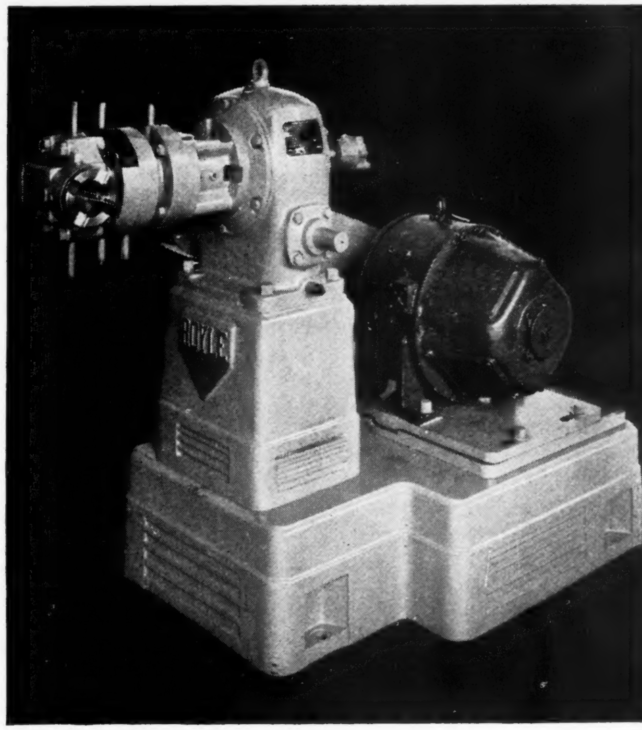
RESEARCH • MATERIALS • ENGINEERING • MANUFACTURE

General Latex & CHEMICAL CORP.

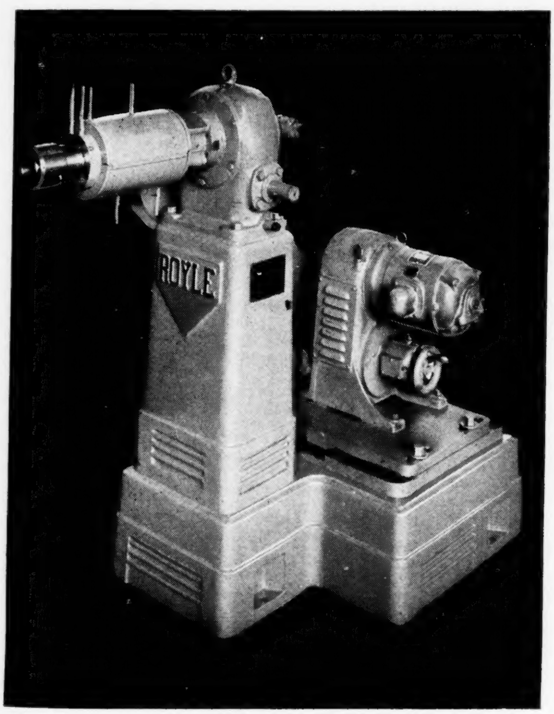
666 MAIN STREET, CAMBRIDGE, MASS.

Agents for Rubber Reserve Company for storage and distribution of natural rubber latex. Distributors for Rubber Reserve Company for synthetic latex. Operators of the Government-owned Baytown, Texas, synthetic rubber plant in collaboration with the General Tire & Rubber Co.

Designed for Experimental and Product Extruding



Royle #1



Royle #½

● Rugged is the word to describe these compact and highly efficient Royle Continuous Extruding Machines — the No. ½ and No. 1. Their diminutive size embraces all of the characteristics required for larger and heavier extruding processes.

● Primarily designed to become an integral part of laboratory equipment — the technician can be sure that his experiment will have true relation to actual product extruding — these machines are efficient and economical producers of such products as tubes, rods, fine wire insulation, mono-filament and thread coating.

● Except for dimensional differences these machines possess identical characteristics.

ARMY E NAVY

ROYLE PATERSON N. J.

JOHN ROYLE & SONS

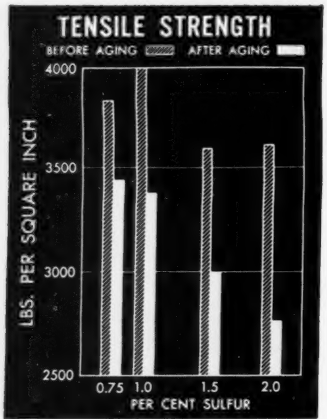
PIONEER BUILDERS OF EXTRUSION MACHINES SINCE 1880

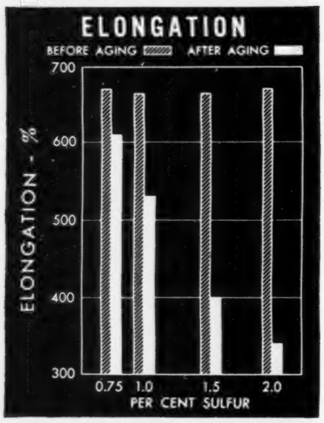
James Day (Machinery) Ltd. London, England REgent 2430

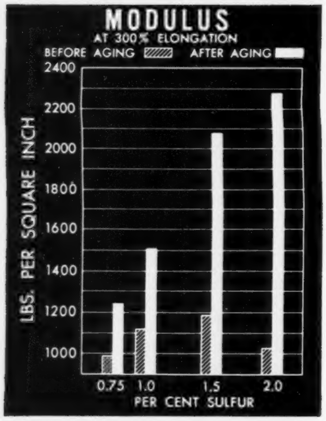
Home Office B. H. Davis J. W. VanRiper SHerwood 2-8262

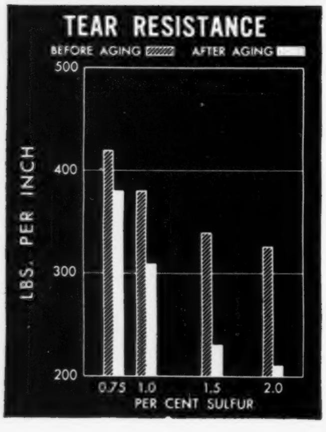
Akron, Ohio J. C. Clinefelter UNiversity 3726

PATERSON 3, NEW JERSEY









Give your GR-S Compounds heat stability provided by low sulfur content

Safe, fast curing now made possible by FBS LITHARGE

As you know, reduction in sulfur content means increase in heat stability.

It has now been demonstrated that FBS litharge (plus benzothiazyl disulfide) makes low sulfur formulas practicable.

Why?

Because it speeds up greatly the rate of cure without increasing the risk of scorching.

Thus, even though the normal quantity of accelerator is used, *the sulfur content can be reduced.*

Note, in the series of tests charted and tabulated, the superior behavior of the 0.75 and 1.0 sulfur formulas.

FORMULA

GR-S (Institute)	100
E.P.C. Carbon Black	50
Zinc Oxide	3
Coal tar softener	5
Benzothiazyl Disulfide	1.0
FBS Litharge	1.5
Sulfur	variable

Effect of Varying Amounts of Sulfur on Physical Properties

(Curing period: 20 min. Temp: 287° F.)

% Sulfur	Tensile Strength	% Elongation	Modulus at 300% Elong.	Tear Resistance
0.75	3840	670	980	420
1.0	4000	665	1120	380
1.5	3600	665	1190	340
2.0	3620	670	1025	325
After Aging 24 Hours at 100° C.				
0.75	3460	610	1240	380
1.0	3380	530	1510	310
1.5	3000	400	2080	230
2.0	2770	340	2280	210

CONCLUSIONS:

1. FBS Litharge-thiazole with low sulfur imparts heat stability.
2. Modulus is high and steady.
3. Elongation is retained despite exposure to heat.
4. Heat stability prevents brittleness and improves tear resistance.
5. Rate of cure is relatively fast, without tendency to scorch.
6. The combination is inexpensive and efficient.

Ask us to send you a printed report, "Compounding of GR-S for Heat Resistance," issued by the Rubber Division of our Research Laboratories, which covers the subject of FBS Litharge for low sulfur formulae in greater detail and from a number of additional angles.

NATIONAL LEAD COMPANY New York, Buffalo, Chicago, Cincinnati, Cleveland, St. Louis, San Francisco; Boston (National-Boston Lead Co.); Pittsburgh (National Lead & Oil Co. of Penna.); Philadelphia (John T. Lewis & Bros. Co.).

TECHNICALLY he's a laborer. He draws wages instead of a salary. He's certainly a mill worker. He gets dirty and sweaty during his eight hours. But more than either he's a CRAFTSMAN because of his years of experience, his long training, his patiently developed skill at a job that can be done *right* only by a man who has these qualifications.

He's one of the reasons we can say "There is no organization in this country better equipped to help you solve problems involving the use of reclaimed rubber than Philadelphia Rubber."

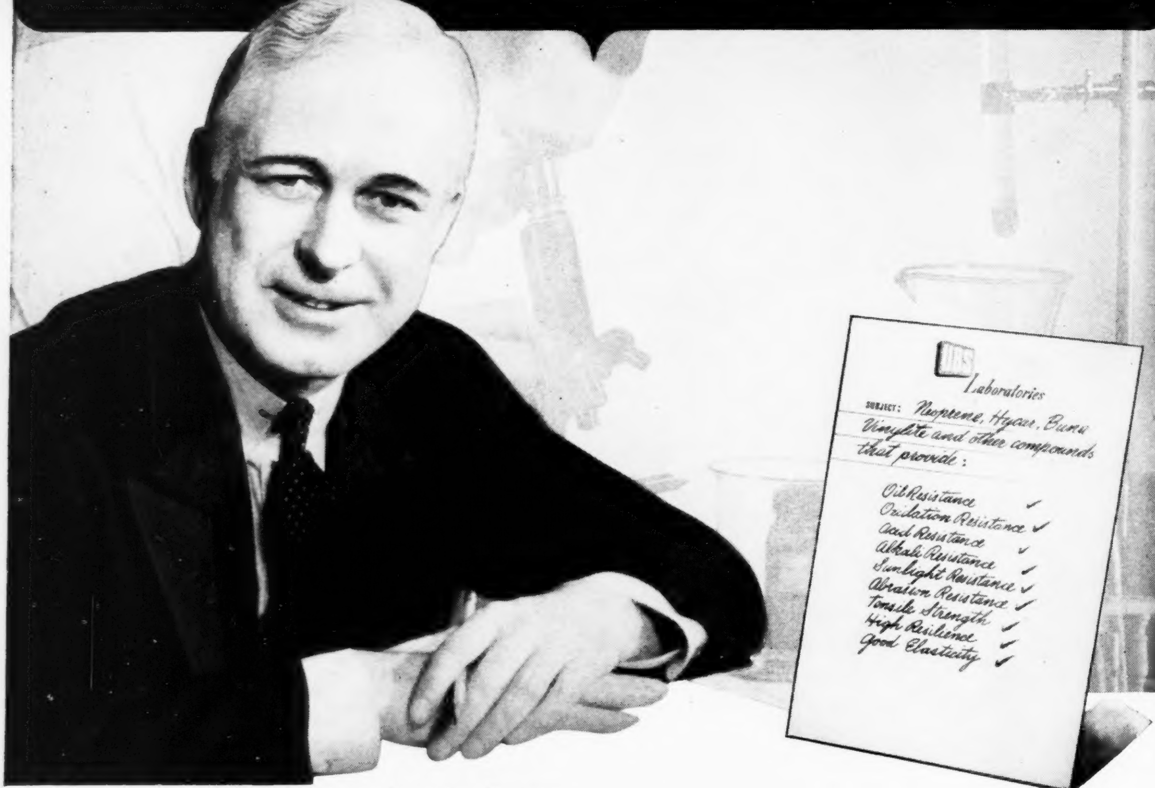
He's one of our "facilities" that will become "available" to you when the war ends. He typifies the *experience* that can be found throughout the entire Philadelphia Rubber organization, from scrap yard to laboratory.

Much of this experience is of long standing. But some of it is new. All of it means better materials and better service to Philadelphia Rubber customers. For example, our new experience with GR-S has brought new knowledge. It has proved that GR-S and reclaim are compatible—that compounds of these two materials mean better rubber products to help in the winning of the war.

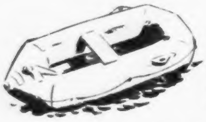
We invite you to take advantage of this experience. Let our laboratory staff and development facilities help you solve any reclaim problems in connection with essential applications that you may have. The Philadelphia Rubber Works Company, 324 Rose Building, Cleveland 15, Ohio.

PHILADELPHIA
RECLAIMED RUBBER

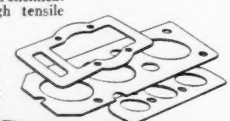
Consult THE UBS LABORATORIES ON POST-WAR BONDING, COATING AND IMPREGNATING PROBLEMS



No matter what the problem may be — *bonding neoprene, rubber and other coated or moulded parts to any ferrous or non-ferrous metal; corrosion proofing chemical tanks and equipment; laminating leather belting; coating magneto parts; combining or coating fabrics; impregnating paper; cementing various materials together; insulating wire and other articles; etc.* — you will find the UBS Laboratories equipped to provide (or develop) a formula that will fill your needs. Long-time specialists in the field of industrial Bonding, Coating and Impregnating Compounds, the UBS Laboratories not only know thoroughly the compounding advantages and limitations of all the latest synthetics, but even have developed an original synthetic latex and synthetic rubber of their own. *Write today, describing your Bonding, Coating, or Impregnating Problems.*



UBS developed adhesives are being used in the manufacture of inflatable Army and Navy Equipment, where weather and chemical resistant seams of high tensile strength are required.



UBS developed compounds are being successfully used to coat magneto parts and for cementing gaskets, where oil resistance is of great importance.

UBS developed adhesives and coating compounds are being widely used on Army delousing bags, protective clothing, etc., where acid resistance and flame resistance are of paramount importance.

UBS developed compounds are being used for chemical tank linings and to corrosion proof chemical handling equipment, where acid resistance and alkali resistance are primary factors.

Address all inquiries to the Union Bay State Chemical Company, Rubber Chemicals Division, 50 Harvard Street, Cambridge 42, Massachusetts.

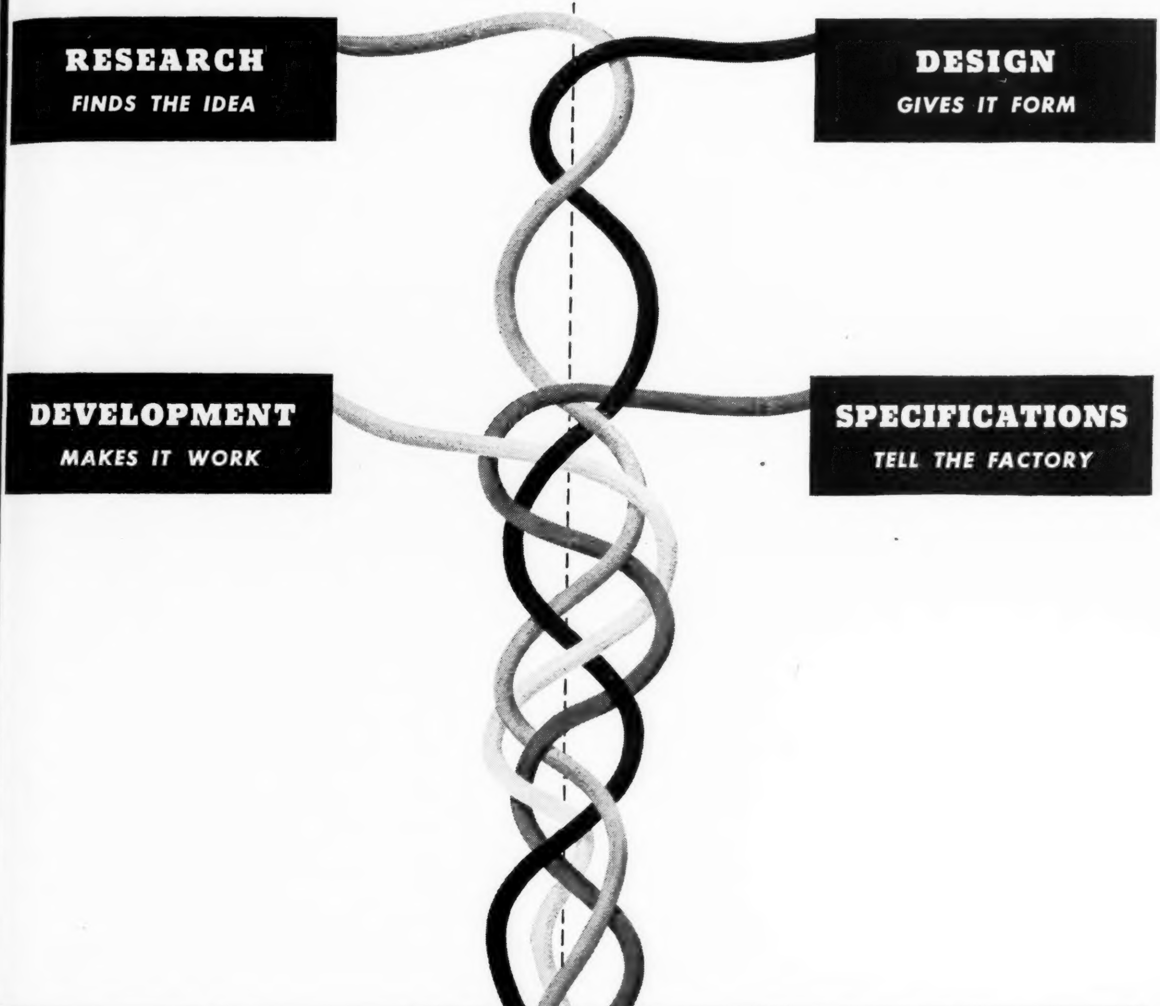
UBS

UNION BAY STATE
Chemical Company

Serving Industry with Creative Chemistry

ORGANIC CHEMICALS · SYNTHETIC LATEX · SYNTHETIC RUBBER
PLASTICS · INDUSTRIAL ADHESIVES · DISPERSIONS
COATING COMPOUNDS · IMPREGNATING MATERIALS · COMBINING CEMENTS

WEAVING COMMUNICATION HIGHWAYS



BELL TELEPHONE LABORATORIES

brings together the efforts of 2000 specialists in telephone and radio communication. Their wartime work has produced more than 1000 projects for the Armed Forces, ranging from carrier telephone systems, packaged for the battle-front, to the electrical gun director which helped shoot down robots above the White Cliffs of Dover. In normal times, Bell Laboratories' work in the Bell System is to insure continuous improvement and economies in telephone service.

The ultimate in GLAZED CLOTH

to meet all requirements for all types of rubber sheeting, must

have superior surface gloss

• • •

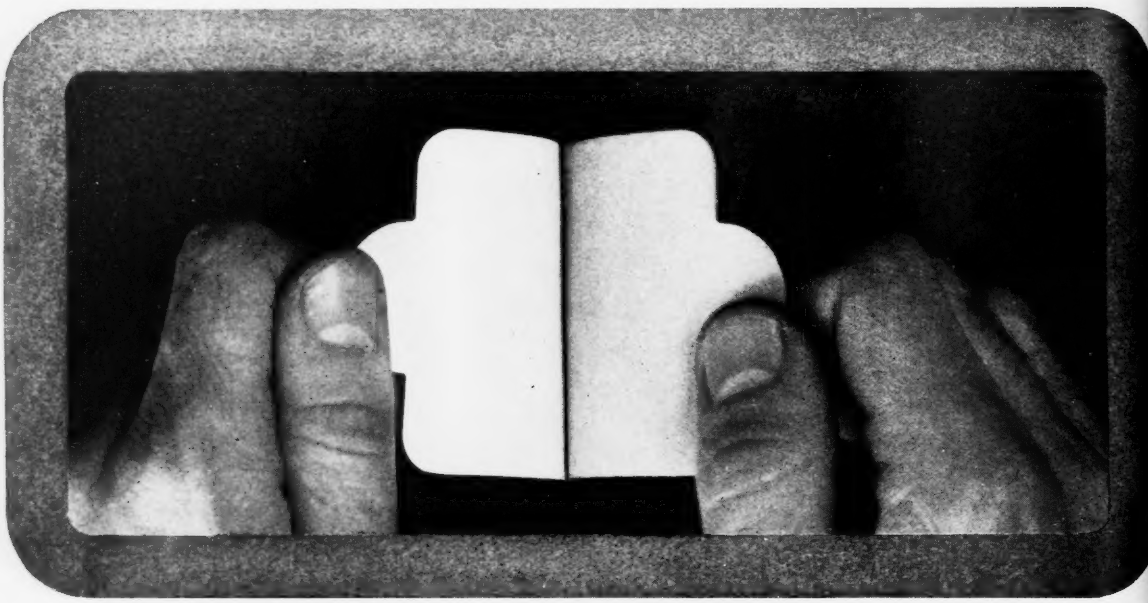
be of uniform caliper and tightly filled

• • •

carry minimum surface load

• • •

be non-flaking and pliable



The Name of That Cloth Is

BRATEX

RUBBER HOLLAND

It is available in 3 qualities and in 3 widths — 20" — 30" — 40" in 100 and 250 yard rolls or in special size rolls on order.

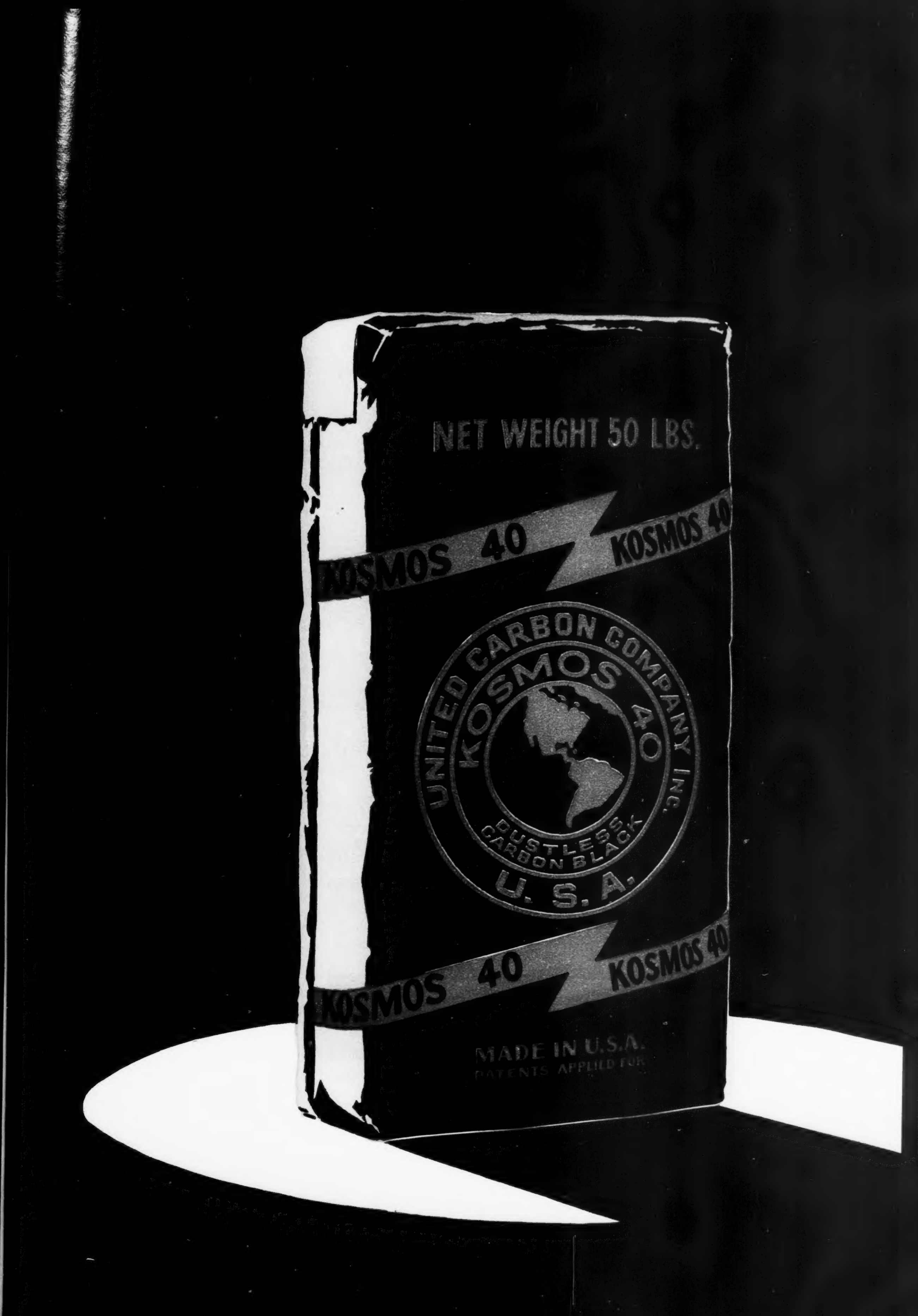
Write for Samples and Prices.

THE HOLLISTON MILLS, INC.

Processors of Cloths for Special Purposes

Dept. B1 Norwood, Massachusetts

RLD


NET WEIGHT 50 LBS.
KOSMOS 40
KOSMOS 40
UNITED CARBON COMPANY INC.
KOSMOS 40
DUSTLESS CARBON BLACK
U. S. A.
KOSMOS 40
KOSMOS 40
MADE IN U.S.A.
PATENTS APPLIED FOR

KOSMOS 40

This latest furnace-process reinforcing carbon black (HMF type) for synthetic and natural rubber possesses a combination of most desirable characteristics—

- cool mixing
- easy processing
- smooth and rapid extrusion
- fast rate of cure
- full reinforcement
- low heat build-up
- high resiliency
- high resistance to cut growth, flex cracking and abrasion.

Kosmos 40 is especially useful for tires of all types, pneumatic or solids, under any conditions; tubes, bogie wheels; footwear; and mechanical goods.

Try a 50-50 blend of Kosmos 40 and channel black for tread stock to secure better plasticity. It will make it possible for you to dispense with one milling and thus—which is so important now—INCREASE YOUR OUTPUT.

RESEARCH DIVISION

UNITED CARBON COMPANY, INC.

Charleston, West Virginia

TRITON R-100

The most widely used Dispersing Agent for the Latex Compounding of GR-S

TRITON R-100 makes it possible to introduce carbon black into synthetic rubber latex, a revolutionary feature which permits maximum production with existing milling equipment. Moreover, the carbon black dispersion formed with this efficient dispersing agent exhibits unusually low viscosity, permits easy handling, and eliminates mechanical difficulties. These features of TRITON R-100 have greatly simplified the GR-S latex compounding process, reducing by one-third the time required for the incorporation of carbon black into synthetic rubber.

TRITON R-100 does not interfere with normal procedure of latex coagulation, and the completed stock is in every way equal to synthetic rubber in which the carbon black has been added by dry milling.

The cost of TRITON R-100 is surprisingly low. It is an economical as well as an efficient dispersing agent for *all types* of carbon black, zinc oxide, and a variety of other solids. Write for detailed information today.

TRITON *is a trade-mark, Reg. U. S. Pat. Off.*
Represented by Cia. Rohm y Haas, Carlos Pellegrini 331, Buenos Aires, Argentina, and agents in principal South American cities.

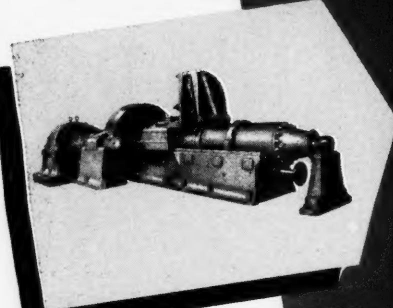
THE RUBBER CHEMICALS DEPARTMENT

ROHM & HAAS COMPANY

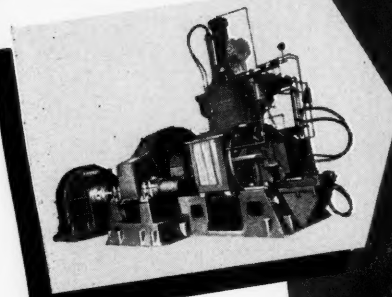
WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Manufacturers of Chemicals for the Rubber, Textile, Leather, Enamelware and other Industries . . . Plastics . . . Synthetic Insecticides . . . Fungicides . . . Enzymes

Filling the need FOR TIRE EXPEDITERS

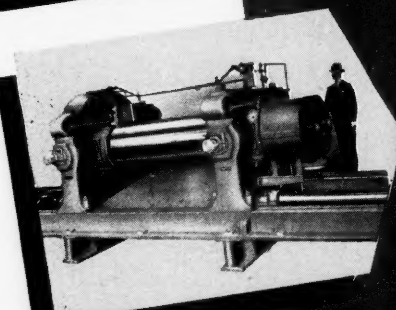


Included in Farrel-Birmingham's war production schedule are orders for many scores of rubber processing machines required for the new Military Tire Program. These efficient, designed-for-the-job "expediters"—Banbury mixers, roll mills, Gordon plasticators and calenders—will enable tire producing plants to meet quotas which would otherwise be unattainable.



This is only one of Farrel-Birmingham's war jobs, for, in addition to being the largest producer of rubber processing machines in the country, the Company builds vital production equipment for the plastics, paper, metal and other war-important industries.

Also one of the leading producers of gears and gear units, Farrel-Birmingham has designed and built main propulsion and auxiliary gear drives for more than a thousand Navy and Maritime ships. In recognition of their outstanding war production records, the three plants of the Company have been awarded the Navy "E" and Maritime "M".

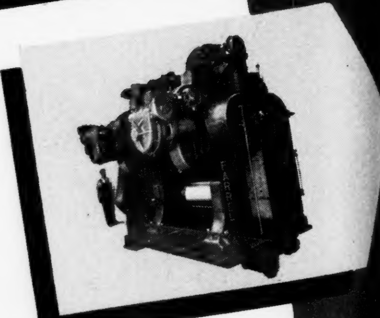


Farrel-Birmingham engineers are experienced in analyzing rubber processing problems and designing equipment to meet individual production requirements. This experience is available to you, without obligation.

FARREL-BIRMINGHAM COMPANY, INC., ANSONIA, CONN.
Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Pittsburgh, Akron, Los Angeles

F-B PRODUCTION UNITS

- Banbury Mixers
- Plasticators
- Pelletizers
- Mixing, Grinding, Warming and Sheeting Mills
- Bale Cutters
- Tubing Machines
- Refiners
- Crackers
- Washers
- Calenders
- Hose Machines
- Hydraulic Presses and other rubber working equipment



Farrel-Birmingham

Signal Corps photo illustrating the urgent need for tire replacements on the battle fronts. Many more scores of new Farrel-Birmingham processing machines will soon be working to meet this demand in leading tire plants throughout the country.

PICCO

Piccolyte

The Versatile Synthetic Resin

Check these practical advantages

- NON-YELLOWING
- PALE COLOR
- LOW COST PER POUND
- SOLUBLE IN LOW-COST NAPHTHAS
- CHEMICALLY INERT
- THERMOPLASTIC

DISTRIBUTED TO THE
RUBBER INDUSTRY BY
STANDARD CHEMICAL COMPANY
AKRON, OHIO

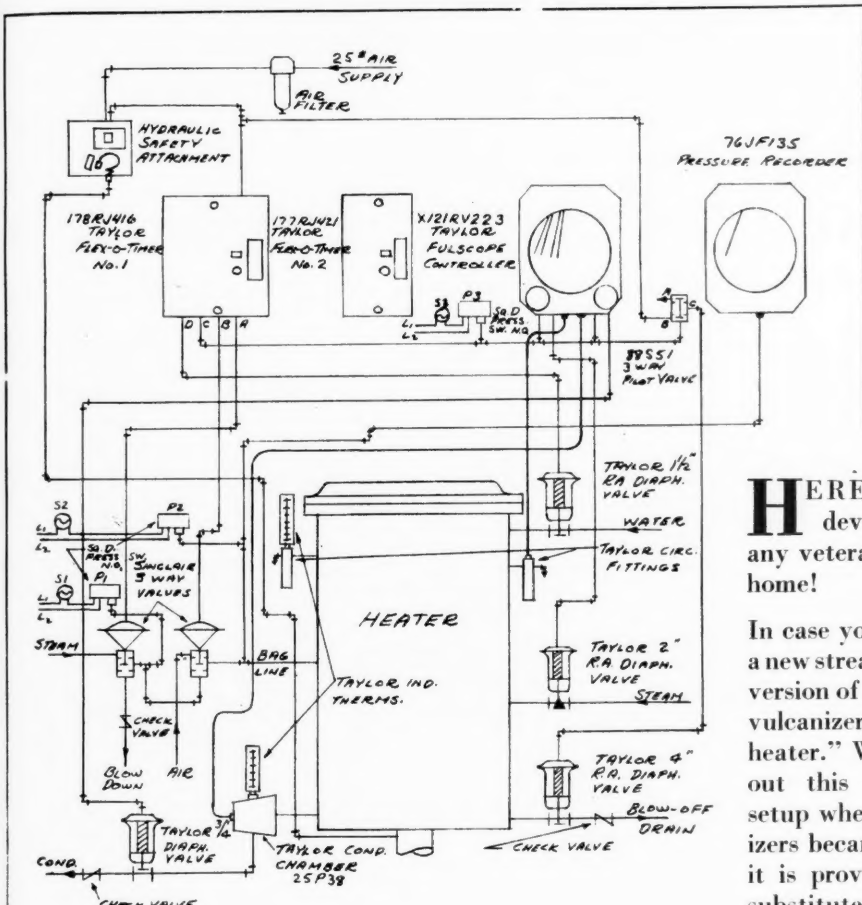
Write for complete details

PENNSYLVANIA INDUSTRIAL CHEMICAL CORPORATION

CLAIRTON, PENNSYLVANIA

Makers of: Coumarone Resins • Coal Tar Naphthas
Rubber Plasticizers • Reclaiming Oils • Terpene Resins

We had to ACCENTUATE THE POT HEATER!



HERE'S a modern vulcanizing development that will make any veteran tire maker feel right at home!

In case you're not an old timer, it's a new streamlined, Taylor-controlled version of one of the earliest types of vulcanizers, commonly called a "pot heater." We were called on to work out this modern instrumentation setup when the demand for vulcanizers became acute, and we are told it is proving an excellent wartime substitute.

In a word, we aren't promoting pot heaters but we're proud of this as another example of Taylor engineering and we hope the moral is plain:

If you have any rubber molding problem—a vulcanizer, a tire press, a platen press or whatever—call your Taylor Field Engineer! Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording, and controlling temperature, pressure, humidity, flow and liquid level.*

ARMY ★ E ★ NAVY

Taylor Instruments

MEAN

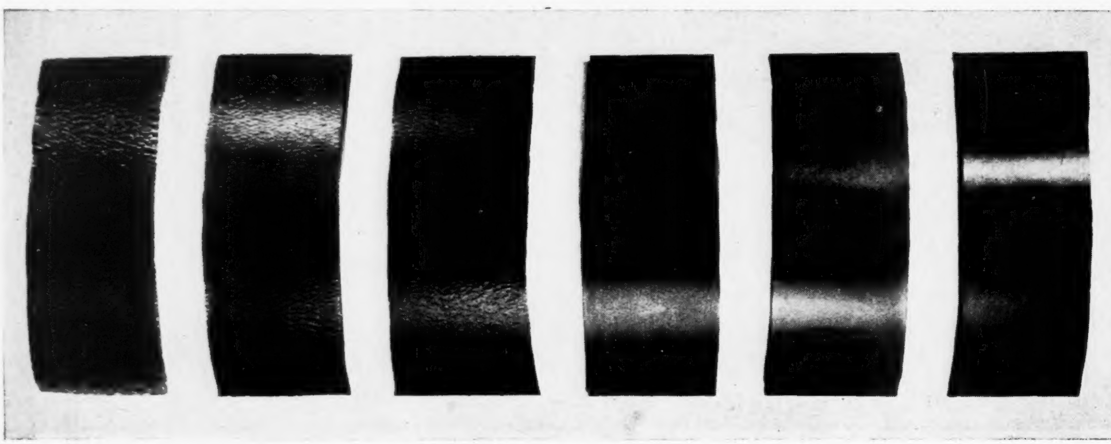
ACCURACY FIRST

IN HOME AND INDUSTRY

BUY WAR BONDS!

Antisol

Will Protect Synthetic Rubbers against Sunlight and Atmospheric Cracking



Control (no wax)	Paraffin 4%	Antisol 1%	Antisol 2%	Antisol 3%	Antisol 4%

Panel Exposed to Direct Sunlight for 50 Days
(Unretouched Photo)

RUBBER H AND M PIGMENTS Chemicals

Bulletin on Request

HERRON BROS. & MEYER

82 BEAVER ST., NEW YORK 5, N. Y.

516 OHIO BUILDING, AKRON, OHIO

SUPPLIERS OF RUBBER CHEMICALS

Struthers Wells NORTHMASTER Kneading Machines are *precision-engineered* by one of the most widely experienced group of process equipment engineers in the industry. Full design advantage of every new material and alloy has been utilized skillfully and wisely to meet the increasing demand for larger, stronger, more efficient types of precision mixing machinery for heavy duty operation at lower cost.

ARMY E NAVY

STRUTHERS WELLS CORPORATION
NORTHMASTER DIVISION
TITUSVILLE, PENNA.
PLANTS AT TITUSVILLE AND WARREN, PA.
Offices in Principal Cities

L THE
LOEWENTHAL CO. has served the Rubber Reclaiming Industry since its inception and therefore has the long experience and the proper facilities for collecting and sorting scrap and meeting specifications accurately. It is a proven service that means much in these times of turmoil and uncertainty. We do not make excuses or ask, "Don't you know there's a war on?" We give service.

L O E W E N T H A L—R U B B E R

THE LOEWENTHAL CO.

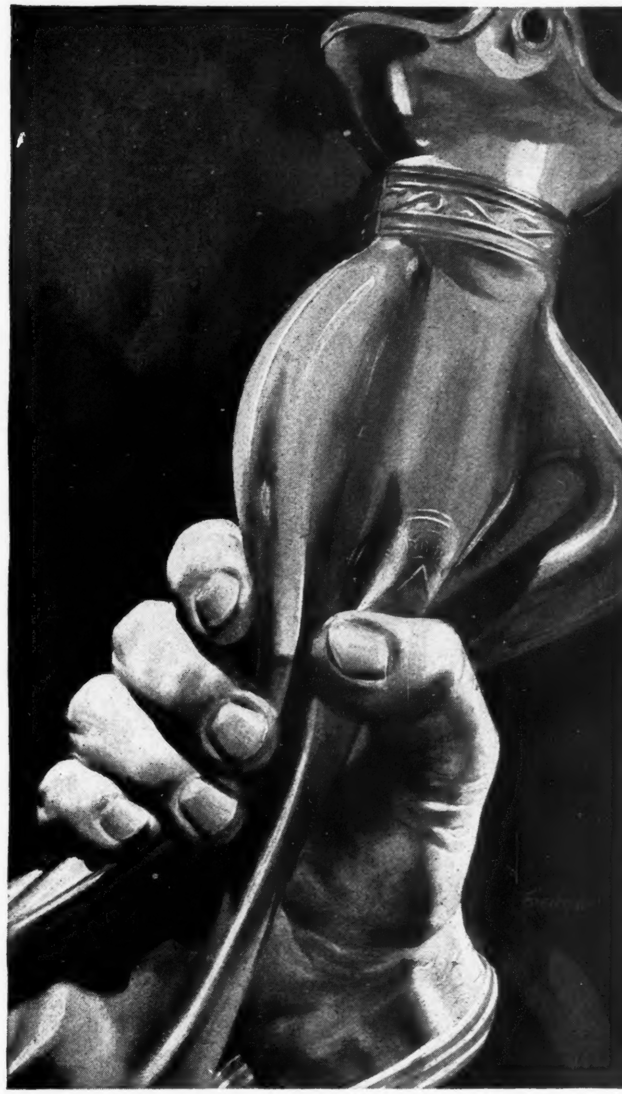
JACK SIDER, *President* J. K. McELLIGOTT, *Exec. Vice-Pres.*

We Solicit Your Inquiries

188 W. RANDOLPH STREET
CHICAGO 1, ILL.

159 CLEWELL STREET
AKRON 5, OHIO

Cable Address: "Gyblowell"



Message to an executive with rubber products to sell

JOHNSON'S RUBBER FINISHES add extra "eye" and "buy" appeal!

Now your new rubber products can be given extra "eye" and "buy" appeal . . . shielded from "shopwear" during production and while on display . . . guarded against scuffs and bumps in transit. Made more impervious to dirt and finger marks, less vulnerable to oxidation and sun-checking, your goods become more salable.

Reason for all these benefits to rubber is Johnson's Rubber Finishes. Secret of their beautifying and protecting powers is wax. Johnson laboratories have made wax the basic ingredient in these finishes that "dress up" a product—give it a lustrous beauty and protection.

Johnson's Rubber Finishes are available in clear and black. They may be easily and economically applied by spraying, dipping, brushing or wiping. Drying time is short. They resist cracking and scaling, are non-flammable.

Johnson's Rubber Finishes *can* give *your* product the "plus" it needs to be a sales leader. For information, fill out and mail the coupon today!

JOHNSON'S RUBBER FINISHES

Made by the makers of Johnson's Wax

S. C. JOHNSON & SON, INC., Racine, Wisconsin

Keep buying more EXTRA War Bonds!

S. C. JOHNSON & SON, INC.
Dept. RW-55, Product Finishes Dept., Racine, Wis.

Gentlemen: Yes, I would like to know how Johnson's Rubber Finishes will help sell my products. Please send the "Special Waxes for Industry" brochure.

Name________________ Title________

Address________________

Company________________

Product________________

PELLETEX and GASTEX

Semi-Reinforcing Furnace Blacks

NO HIT AND MISS

Made by pioneers in the process of manufacturing blacks under definite control that insures a uniform material at all times.

GENERAL ATLAS CARBON CO.
MANUFACTURER
Pampa, Texas
Guymon, Okla.

HERRON BROS. and MEYER
DISTRIBUTOR
New York, N. Y.
Akron, Ohio

1 quality

1 grade

K&M LIGHT MAGNESIUM OXIDE

Manufactured under precise control to meet neoprene compounders exacting requirements.

Available in large quantities — Prompt Warehouse Service.

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

One of America's oldest and most reliable makers of asbestos and magnesia products. Founded 1873

ARMY E NAVY
K&M best in asbestos

OUR DISTRIBUTOR FOR K&M LIGHT MAGNESIUM OXIDE IS:

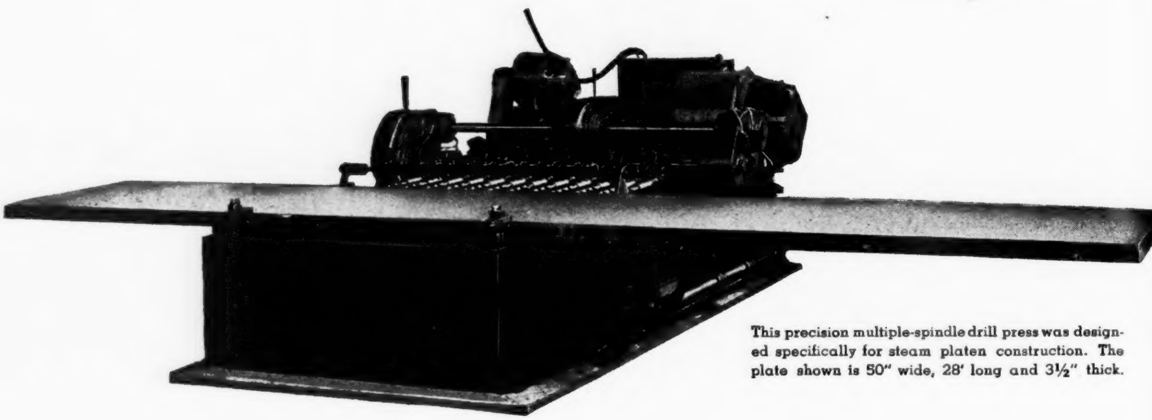
AMERICAN CYANAMID & CHEMICAL CORPORATION

30 Rockefeller Plaza, New York 20, N. Y.

WITH SALES REPRESENTATIVES TO THE RUBBER INDUSTRY AND STOCK POINTS:

AKRON, OHIO, Akron Chemical Company
BOSTON, MASS., Ernest Jacoby & Company
CHICAGO, ILLINOIS Herron & Meyer
LOS ANGELES, CAL., H. M. Royal, Inc.
TRENTON, N. J., H. M. Royal, Inc.

3 Reasons why R. D. WOOD STEAM PLATENS *are trouble-free . . .*



This precision multiple-spindle drill press was designed specifically for steam platen construction. The plate shown is 50" wide, 28' long and 3½" thick.

1. UNIFORM HEAT DISTRIBUTION . . .

holes are drilled on a special horizontal multiple-spindle drill press that insures straightness, accurate center line location and uniform spacing.

2. ACCURATELY-MACHINED SURFACES . . .

plate thicknesses are uniform throughout the entire plate area. Surface can be finished as required from ordinary smooth tool finish to a highly polished surface.

3. PERMANENTLY STEAM-TIGHT . . .

welded plug construction eliminates the need for threaded joints. Prevents leakage under even the most severe operating conditions.

If you have need for steam platens or hot plates of any size, shape or thickness, it will pay you to consult with R. D. WOOD engineers. Our facilities for and experience in steam platen construction covers the rubber, plastic, wallboard and many other fields. Write us today about your steam platen problems.

HYDRAULIC PRESSES AND VALVES
FOR EVERY PURPOSE...

R. D. WOOD CO.

400 CHESTNUT ST.
PHILADELPHIA 5, PA.

tires
footwear
mechanicals
MADE FROM GR-S
are improved
BY THE USE OF
NEVOLL

because it contributes to high abrasion resistance, low permanent and compression set, higher tensile strength and elongation, lower hysteresis and greater resilience, and better low temperature flexibility.

NEVOLL improves calendering and assists in wetting fillers.

Now available for prompt shipment in tank-cars or drums.

THE NEVILLE COMPANY
PITTSBURGH 25, PA.

Chemicals for the Nation's Vital Industries

Turn Back the Clock to 1920

Compare this view of Manhattan as it looked in 1920 with the way it looks today. Twenty-five years have made a difference... the city has moved forward...grown bigger...taller... and the story of its progress is etched in its skyline.

Organized in 1920, the Witco Chemical Company, too, has grown swiftly and steadily... from a small office with a personnel of four to a world-wide organization. Now entering its second quarter of a century with a list of more than 200 chemicals, oils, pigments, asphalts, and other products, Witco is prepared to meet the chemical requirements of a fast expanding industrial world.

Witco invites you to test the quality of its products...to use the facilities of its modern research laboratory and the services of its experienced research staff.

WITCO'S WITCARB R

One of Many Quality-Sure Witco Products Contributing to Chemical Progress

Witcarb R is a white pigment of extremely small particle size that provides an excellent reinforcing Pigment in Hycar and Neoprene, Butly & GR-S. It produces excellent physical properties, good tensile and tear resistance—but it must be mixed well, as carbon black must be, for satisfactory results. Recommended processing procedure will be sent upon request.

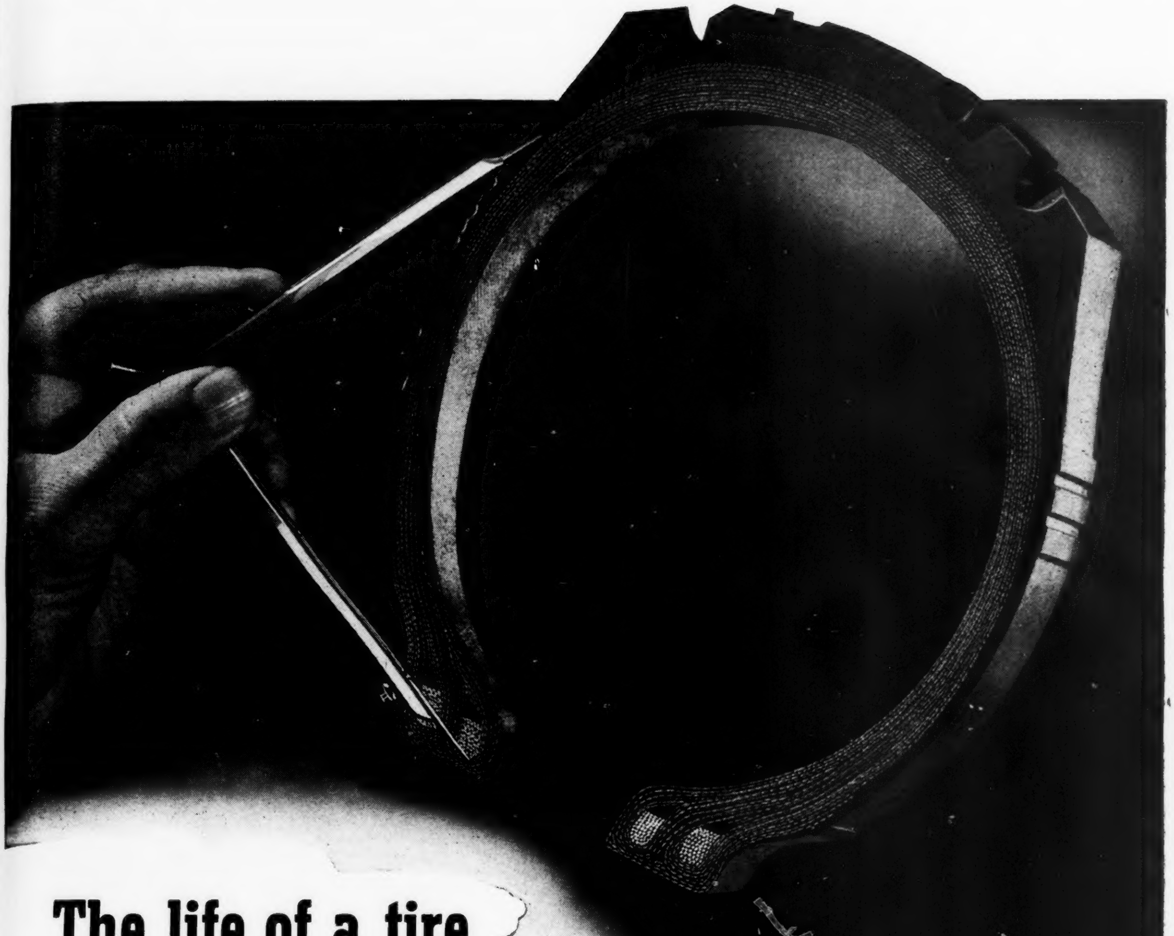
WITCO CHEMICAL COMPANY

MANUFACTURERS AND EXPORTERS

[Formerly Wishnick-Tumpeer, Inc.]

295 MADISON AVENUE, NEW YORK 17, N. Y.

Boston • Chicago • Detroit • Cleveland • Akron • London



The life of a tire is measured here

SURE, it's the tread on a tire that is actually *worn away.* But the tread can be replaced again and again. The real *life* of the tire is determined by the *carcass,* and the *bead.* That's because, no matter how fine or how frequent your recap jobs, a tire just *can't live longer* than any *one* of these *vital parts.*

The bead, especially, is an extremely *critical part* of a tire's structure. And it is only by the use of high quality steel wires correctly applied in the bead construction, that tires have the strength and rigidity necessary for long trouble-free service. So no wonder leading tire manufacturers set such high standards of workmanship and specify National-Standard steel wire for bead making.

In close cooperation with rubber engineers, National-Standard is continually developing better and better wire for tires and scores of other wire-and-rubber applications. Since the early days of the rubber industry, improving the quality of wire for tires and developing time-saving wire applying machines, has been one of our primary concerns.

Take advantage of our skill and experience by letting us help you work out new uses for wire-and-rubber in your products.

NS
NATIONAL-STANDARD
Company
NILES, MICHIGAN

Buy and Keep War Bonds and Stamps

Divisions of National-Standard Company

NATIONAL-STANDARD	ATHENIA STEEL	WAGNER LITHO MACHINERY	WORCESTER WIRE WORKS
Niles, Mich.	*Clifton, N. J.*	*Hoboken, N. J.*	*Worcester, Mass.*
TIRE WIRE, FABRICATED BRAIDS AND TAPE	COLD ROLLED, HIGH-CARBON SPRING STEEL	LITHOGRAPHING AND SPECIAL MACHINERY	ROUND STEEL WIRE, SMALL SIZES


ECLIPSED...
...but for how long ?
THE day and the hour when natural rubber again will be available is of course anybody's guess . . . but there is reason to believe that its return will not be delayed too long after the war is won.
Then, white sidewall tires again will have their place in the sun, and the whitest and brightest will owe their superiority to titanium dioxide pigments, most widely known and used under the name of TITANOX.
Evidence of the superiority of white sidewalls pigmented with TITANOX is to be found in the performance records of large numbers of these tires fabricated before the war. After more than three years on the road their brilliance is little diminished and they are remarkably free of cracking and checking . . . a good thought to bear in mind when the "eclipse" is over.
TITANIUM PIGMENT CORPORATION · Sole Sales Agent
111 Broadway, New York 6, N. Y • 350 Townsend St., San Francisco 7, Cal.
104 South Michigan Ave., Chicago 3, Ill. • 2472 Enterprise St., Los Angeles 21, Cal.
TITANOX
REG. U S PAT OFF
TITANOX
REG. U S PAT. OFF

an excellent plasticizer available now

mail coupon for sample and data

Monsanto Ortho-Nitrodiphenyl has amazing versatility when used as a plasticizer.

It can be used alone or in conjunction with other plasticizers and is applicable to the entire range of synthetic resins from the cellulose esters and ethers through the vinyls and vinyl copolymers.

It is compatible with alkyds and some synthetic rubbers.

Why not look into the possibilities of Monsanto Ortho-Nitrodiphenyl? You may find it to be your solution to the problem caused by hard-to-get plasticizers. Complete technical data and samples will be sent promptly upon request. Please use the coupon below, contact the nearest Monsanto office or write: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, San Francisco, Seattle, Montreal, Toronto.

MONSANTO CHEMICALS

SERVING INDUSTRY...WHICH SERVES MANKIND

MONSANTO CHEMICAL COMPANY
Dept. I-13, Organic Chemicals Division
1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, technical data and sample of Monsanto Ortho-Nitrodiphenyl.

Name__________

Company__________

Street__________

City__________ Zone_____ State_____

for **INSULATED WIRE**

Tensile Strength

Resistance to aging

Dielectric strength

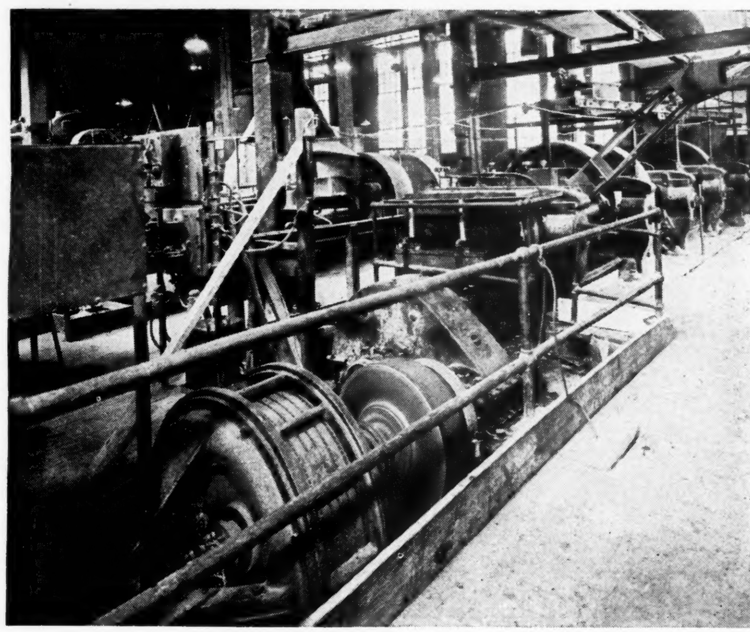
Write Our Technical Service Dept. for Details

MOORE & MUNGER

33 RECTOR STREET - NEW YORK CITY

Cut Rubber Milling Costs
with this NEW CLUTCH

New operating and maintenance economies are introduced into rubber milling by the Fawick combined Clutch and Brake, with complete freedom from the troubles of conventional clutches. A Fawick Clutch installation far exceeds all minimum safety requirements for rubber mills.



The FAWICK Airflex Clutch

. . . saves TIME, space, maintenance and repairs. It has no arms, toggles or springs—needs no lubrication or adjustments—controls power and torque by air—absorbs shocks and vibration.

Proved by the Navy under battle conditions and on heavy-duty drives throughout industry.

Fawick Engineering Department will gladly give you recommendations and further details.

FAWICK AIRFLEX COMPANY, INC.
9919 Clinton Rd. • Cleveland 11, Ohio

In Canada, **Renold-Coventry Ltd., Montreal, Toronto, Vancouver**

In Britain, **Crofts Engineers, Ltd., Bradford, England**

FAWICK *Airflex* CLUTCH

POWER CONTROLLED BY AIR

LABORATORY TESTED PRODUCTS FOR THE

RUBBER Industry

When you specify "Whittaker" products, you can be sure of uniformity and quality. Strict testing is done in our own laboratory.

Talc • Stearates • Heavy Magnesium Oxide • Extra Light Calcined Magnesia • Pumice Stone • Whiting Sericite • Magnesia Carbonate • Pyrophyllite

EST. WHITTAKER 1890

7778

Whittaker, Clark & Daniels, INC.

260 West Broadway, New York City • Plant: South Kearney, New Jersey

SALES REPRESENTATIVES

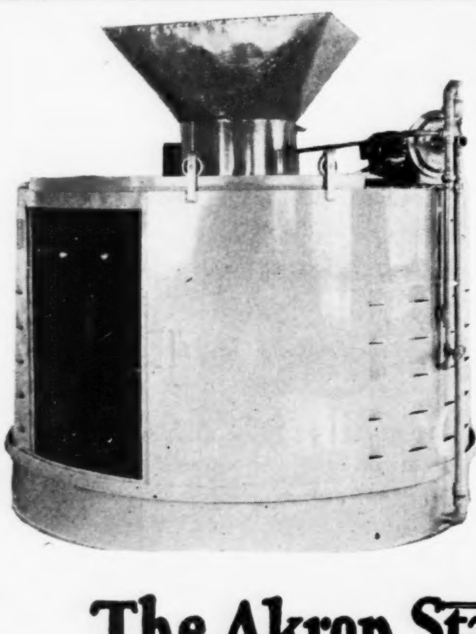
CHICAGO
Harry Holland & Sons

NEW ORLEANS
Edward W. Ortenbach

PHILADELPHIA
Peltz & Company

TORONTO & MONTREAL
Richardson Agencies, Ltd.

CLEVELAND
Palmer Supplies Co., *formerly* Palmer Schuster Co.



RUBBER SLAB COOLER

The mill room equipment at the left is used to lubricate cool and dry rubber slabs having been hand cut from a rubber mixing mill.

Do that job for less money, in less floor space with cleanliness around your mills.

Simple to operate, practically no maintenance or care required.

Set in required location. No anchor bolts necessary. Connect electrical line, water and drain. It is then ready for operation.

FURTHER DETAILS UPON REQUEST

The Akron Standard Mold Co.

Akron Ohio

"The Established Measure of Value"


TREATED TIRE FABRICS
BUILD BETTER TIRES
CONTROL No. 12222
DISPERSITE
DRUM No.1
Dispersions
UNDER MANAGEMENT
1230 SIXTH AVENUE, NEW YORK 20, N. Y.
In Canada: DOMINION RUBBER COMPANY, LTD., MONTREAL

QUALITY CHEMICALS MAKE QUALITY RUBBER PRODUCTS

FOR UNIFORMITY AND PURITY IN RUBBER CHEMICALS ORDER THESE GENERAL CHEMICAL PRODUCTS:

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

Sulfur: Commercial Rubbermakers' and other grades.

Sulfuric Acid: All grades and strengths.

Aluminum Sulfate: To precipitate polymerized synthetic rubbers.

Fluosulfonic Acid: For production of Boron Trifluoride.

Potassium Cyanide—Sodium Cyanide: In production of acrylonitrile rubbers.

Copper Fluoborate—Zinc Fluoborate—Copper Cyanide—Sodium Cyanide: Intermediates for "plating" rubber to metals.

Lead Fluoborate: For lead plating in battery manufacture.

Baker & Adamson Reagents and Fine Chemicals

GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

There's Going to Be the Devil to Pay!

Yes—and there's the devil to pay in your plant if lack of uniformity in solvents throws the whole production line out of gear.

But—you can avoid that headache by specifying SKELLYSOLVE. A given type of SKELLYSOLVE ordered tomorrow, or any time, will be identical in characteristics with that same type ordered now. SKELLYSOLVE means dependable uniformity, because, in refining it, we depend on *accurate, scientific, instrumented quality control.*

SKELLYSOLVE
in the
RUBBER INDUSTRY

There are six different types of Skellysolve which are especially adapted to various uses in the rubber industry, for making rubber cements, and for many different rubber fabricating operations. Skellysolve offers many advantages over benzol, rubber solvent gasoline, toluol, carbon tetrachloride, etc. It will pay you to investigate Skellysolve. Write today.

SKELLYSOLVE

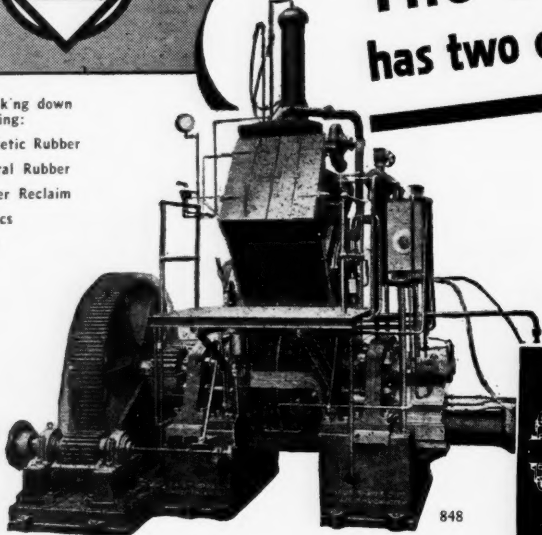
SOLVENTS DIVISION, SKELLY OIL CO.
SKELLY BLDG., KANSAS CITY, MO.

SHAW

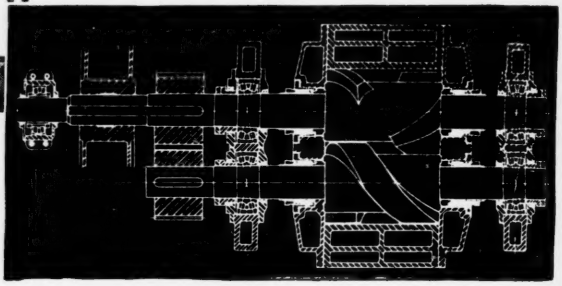
The SHAW Intermix has two outstanding advantages

For Breaking down and Mixing:

- Synthetic Rubber
- Natural Rubber
- Rubber Reclaim
- Plastics
- Paint



1. It provides a wider range of temperature control than other internal mixers having the same capacity, due to its capability of mixing stocks at a lower temperature.
2. Bearing wear has been virtually eliminated by the use of Roller Bearings and wear in the mixing chamber greatly reduced by overall location of the rotors.



DETAILS ON APPLICATION

The patented rotors of the Shaw Intermix, etc., etc.

FRANCIS SHAW & COMPANY, LTD. • MANCHESTER 11, ENGLAND

R.131.D

SULPHUR and CHEMICALS FOR THE RUBBER INDUSTRY

CRYSTEX INSOLUBLE SULPHUR

Commercial Rubbermakers' Sulphur, Tire Brand, 99½% Pure

Refined Rubbermakers' Sulphur, Tube Brand, 100% Pure

Carbon Tetrachloride, Carbon Bisulphide

Caustic Soda, Sulphur Chloride

OTHER STAUFFER PRODUCTS

*Aluminum Sulphate
Borax
Boric Acid
Carbon Bisulphide
Carbon Tetrachloride
Caustic Soda
Citric Acid
*Copperas
Cream of Tartar
Liquid Chlorine
Muriatic Acid
Nitric Acid
Silicon Tetrachloride
Sodium Hydrosulphide
Stripper, Textile
Sulphur
Sulphuric Acid
Sulphur Chloride
*Superphosphate
Tartar Emetic
Tartaric Acid
Titanium Tetrachloride

Stauffer CHEMICALS SINCE 1885

STAUFFER CHEMICAL CO.

420 Lexington Ave., New York 17, N. Y.
221 N. LaSalle Street, Chicago 1, Ill.
636 California St., San Francisco 8, Cal.
555 So. Flower St., Los Angeles 13, Cal.

424 Ohio Building, Akron 8, Ohio
North Portland, Oregon
Houston 2, Texas
Orlando, Florida

RUBBER

Synthetic Crude Scrap

Also **HARD RUBBER DUST**
and **BALATA**

LET US SERVICE YOUR RUBBER RESERVE PERMITS

H. MUEHLSTEIN & Co. INC.

122 EAST 42nd STREET, NEW YORK, N. Y.

CHICAGO: 327 So. La Salle St. • **AKRON:** 250 Jewett St. • **LOS ANGELES:** 1431 E. 16 St. • **MEMPHIS:** 46 W. Virginia Ave. • **BOSTON:** 31 St. James Ave.

MAGNESIA

MAGNESIUM CARBONATE

Technical and U.S.P. Grades

MAGNESIUM OXIDE

EXTRA LIGHT The Original Neoprene Type
A supreme quality product for the rubber trade. Extremely fine state of division. Improves storage stability and resistance to scorching. A curing agent unexcelled for increased modulus, greater resilience, reduced heat build-up, lower compression set and retention of tensile strength during heat service.

LIGHT A high quality product of greater density than "Extra Light," but high in MgO and low in impurities. An excellent value for many uses.

MEDIUM A good value. Very active. High Magnesia content, low in impurities. Medium density.

HEAVY All types can be furnished. Specially ground to meet the exacting Code Pigment Specifications of the Rubber Trade. Unground types for chemical uses.

PACKAGES—Specially designed to protect contents from moisture and air. Corrugated carton with special water-proof liner, and inner paper liner. Five-ply multi-wall bag, including asphalt liner.

Special Service for All Requirements of the Rubber Trade

GENERAL MAGNESITE & MAGNESIA COMPANY

Specialist in Magnesia

MANUFACTURERS—IMPORTERS—DISTRIBUTORS

2960 East Venango St. PHILADELPHIA 34, PA.

Sales Representatives:

AKRON—The C. P. Hall Co.
BOSTON (Cambridge)—William D. Egleston Co.
BUFFALO—Commercial Chemicals, Inc.
CHICAGO—The C. P. Hall Co.
DENVER—The Denver Fire Clay Co.
DETROIT—C. L. Hueston
LOS ANGELES—The C. P. Hall Co. of California
MONTREAL—Canadian Industries, Ltd.
NEWARK, N. J. — Chas. S. Wood & Co., Inc.
PORTLAND, ORE.—Miller & Zehrung Chemical Co.
ST. PAUL, MINN.—George C. Brandt, Inc.
SEATTLE, WASH.—Carl F. Miller & Co.
TRENTON, N. J.—General Supply & Chemical Co.

PIONEERS

in the development of standard and special equipment for the cutting and grinding of rubber and synthetic rubber.

FINE BR TOOLS

BLACK ROCK MFG. CO.

175 Osborne Street Bridgeport 5, Conn.

Eastern Representatives for the Schuster Magnetic Gauge

New York Office:
261 Broadway

Pacific Coast Representatives:
Lombard Smith Co.
2032 Santa Fe Ave.
Los Angeles, Cal.

The term

"COTTON FLOCKS"

does not mean cotton fiber alone

EXPERIENCE
over twenty years catering to rubber manufacturers

CAPACITY
for large production and quick delivery

CONFIDENCE
of the entire rubber industry

KNOWLEDGE
of the industry's needs

QUALITY
acknowledged superior by all users are important and valuable considerations to the consumer.

Write to the country's leading makers for samples and prices.

CLAREMONT WASTE MFG. CO.

CLAREMONT N. H.

The Country's Leading Makers

A NATION WIDE CONTEST TO SOLVE A NATION WIDE PROBLEM

$1,000. IN CASH PRIZES

One of the greatest problems facing the rubber industry in America today is that of utilizing or processing cured synthetic rubber scrap. It is a big problem and as yet no practical solution has been arrived at. So important is its solution to the rubber industry that a group of rubber technologists identified with the rubber industry, known as the Chicago Rubber Group is offering three prizes, totaling $1000.00 for the best papers on the utilization (reclaiming and processing) of cured synthetic rubber scrap. While the papers may deal with any phase of the problem, here are some subjects which suggest themselves: 1. Separation and segregation of synthetic scrap rubber. 2. Methods of identification of synthetic rubber. 3. Reclaiming of synthetic scrap rubber. 4. Compounding studies which will result in greater use of reclaimed scrap, or of ground synthetic scrap. First prize: $500.00; second prize, $300.00; third prize, $200.00. If you feel you have an idea of value, be sure to enter this contest. You may win one of these cash prizes.

READ THESE SIMPLE CONTEST RULES

This contest is open to anyone in the United States or Canada excepting officers and directors of the Chicago Rubber Group for 1943-45. Selection of subject matter is left to the discretion of the contestant. As many papers as desired may be submitted by any one contestant. Papers should be based upon information which has not previously been presented before any technical society meeting or published in any trade magazine. Contest closes at midnight on August 1, 1945. Awards will be made during the fall meeting of the American Chemical Society in Chicago, 1945. The decision of the judges will be final. Each author must submit three copies of his paper to Mr. A. R. Floreen, Vice President, City National Bank & Trust Company, 208 S. La Salle St., Chicago. These three copies will be judged separately by the Rubber Manufacturers Association, the Rubber Reclaimers Association and the Rubber Division of the American Chemical Society. The judges will report their findings to Bruce W. Hubbard, Chairman Chicago Rubber Group, 2512 W. 24th Street, Chicago, to whom all inquiries for additional information should be addressed.

Sponsored by CHICAGO RUBBER GROUP, Chicago
Space donated by STANDARD CHEMICAL COMPANY, Akron 8, Ohio

SYNTHETIC RUBBER

PLUS

GY-4

PLASTICIZER

EQUALS

NATURAL RUBBER PROCESSING

A stabilized product that reduces the heat created by friction and does not volatilize during the mix or rob the stock of the necessary tack.

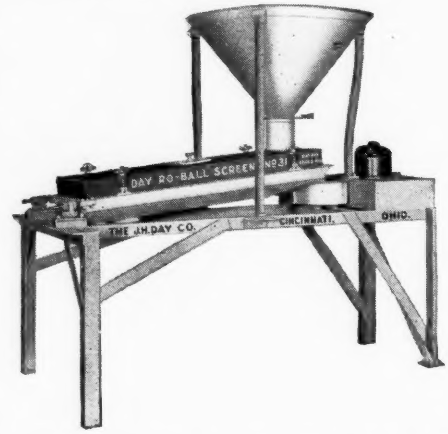
Galey Manufacturing Company

17700 LAKE SHORE BOULEVARD

CLEVELAND 19, OHIO

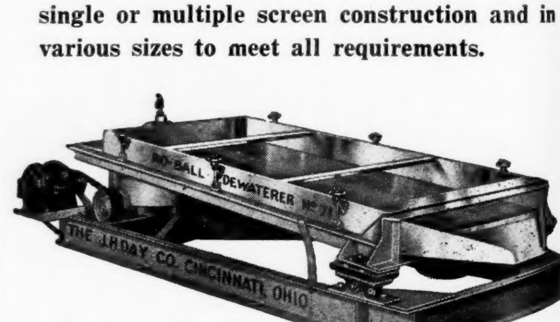
Ro-Ball Screens for the Rubber Industry

The action of the screen box, which operates at a nearly level angle, combines with the Day Super-Active Ball Cleaning Device to produce an effective screening action.



The Ro-Ball above is a No. 31, Hopper Feed, Closed Top Type which is used extensively for processing of natural or compounded rubber products, where sulphur, oxides, etc., are used, and dust tight construction is required.

These machines can be furnished in either single or multiple screen construction and in various sizes to meet all requirements.



The open construction shown above is used extensively for dewatering operations where caustics are used in reclaiming rubber. These units can be furnished in various sizes to meet all production requirements.

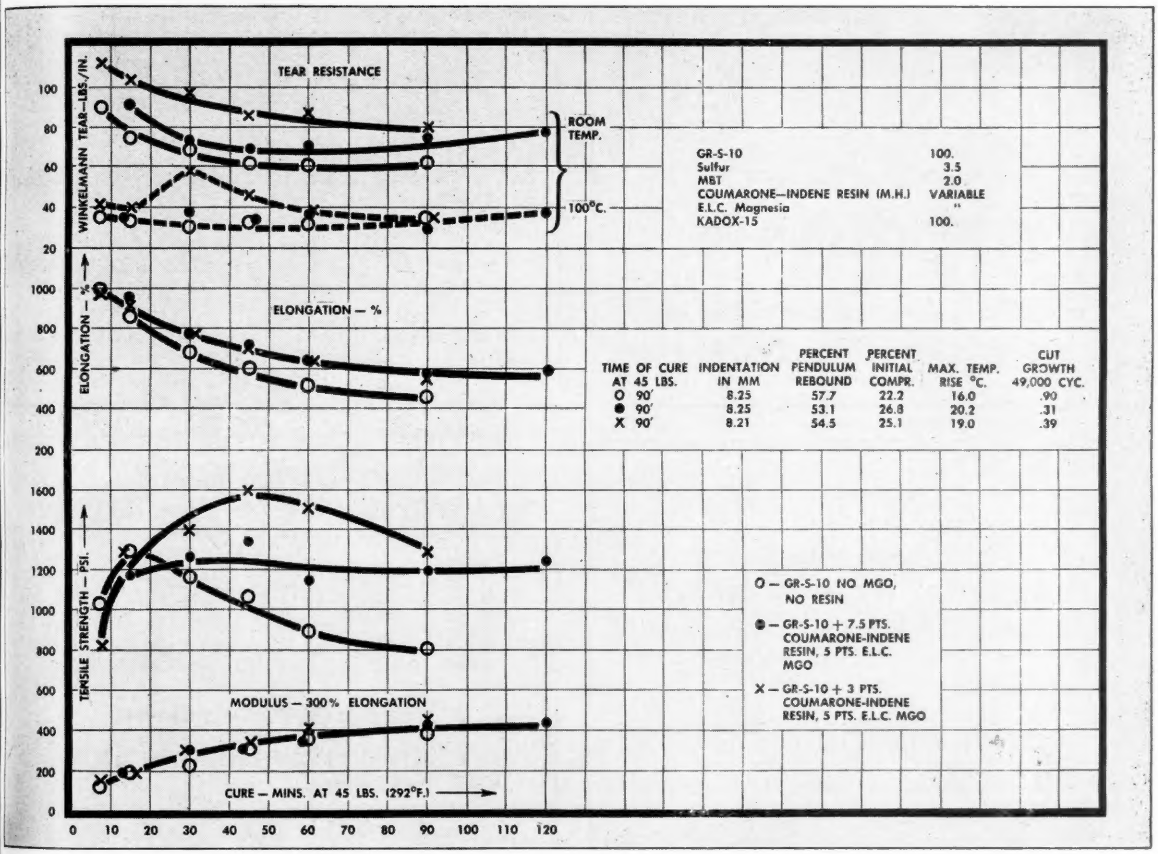
The J.H. DAY Company
CINCINNATI 22 OHIO.

Technical Bulletin No. 10 on the Compounding of GR-S with Substantial Loadings of Zinc Oxide

GR-S-10 (Rosin Soap Polymer)

MBT Acceleration — Effect of the Addition of Coumarone-indene Resin and ELC Magnesia

(Refer to Technical Bulletin No. 9)



GR-S-10 without plasticizer and ELC magnesia gives an early peak in the curing curve, and tensiles decline quite rapidly as the cure progresses. The addition of 7.5 parts of coumarone-indene resin and 5 parts of ELC magnesia flattens the curing curve over the range 15-120 minutes. However, this amount of resin causes a noticeable increase in the tendency to stick to the back roll. Reducing the resin content to 3 parts corrects this tendency and the physical properties of the compound are considerably improved—especially tensile strength and tear resistance at both room temperature and 100°C.

Uniform Quality
HORSE HEAD ZINC OXIDES

THE NEW JERSEY ZINC COMPANY

160 FRONT STREET • NEW YORK 7, N. Y.

Products Distributed by **THE NEW JERSEY ZINC SALES COMPANY**
NEW YORK • CHICAGO • CLEVELAND • SAN FRANCISCO

RAYCO FLOCK

minimizes marking in sole compounds

Rayco cotton flock filler, plus Rayco research assistance, is enabling various sole manufacturers almost completely to reduce marking. Rayco Fillers offer numerous advantages in the compounding of crude, synthetic and reclaim stocks.

Request Samples and Prices

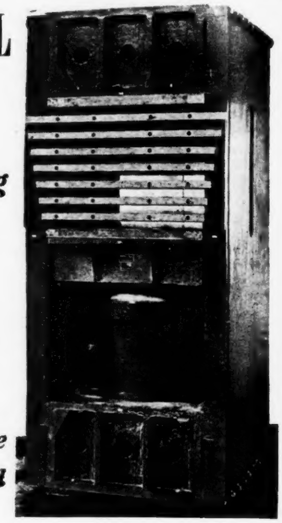
RAYON PROCESSING CO. of R.I. INC.
102 TREMONT ST., CENTRAL FALLS, RHODE ISLAND

Developers and Producers of Cotton Fillers for Plastics

FRENCH OIL 1005-TON

Upward Acting

HOT BED PRESS



Will Help Increase Production and Cut Costs.

Model 2122

32″ Diameter, 16″ Stroke, Eight 2″ Openings. 42″ x 54″ Pressing Surface. Working Pressure 2,000 Pounds.

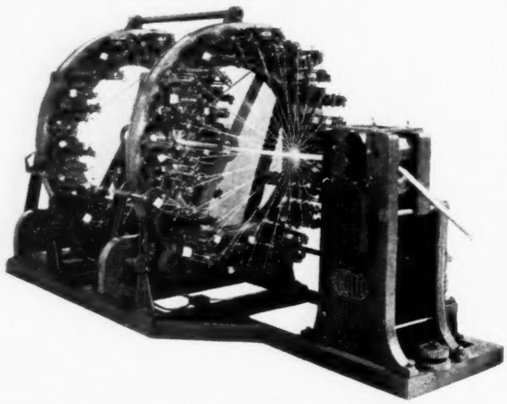
Write for Bulletin "Modern Hydraulic Presses," Hydraulic Press Division

***The* FRENCH OIL MILL MACHINERY CO.**
PIQUA . OHIO

NEBUTTCO

Horizontal Hose Braiders

We manufacture Horizontal Hose Braiders for braiding automotive hydraulic brakes, also for steam, water and pressure greasing, with cotton or wire strands.



48-48 CARRIER HORIZONTAL HOSE BRAIDER

NEW ENGLAND BUTT CO.
PROVIDENCE 7, R. I., U. S. A.

MARBON "S" AND "S-1"

Synthetic Resins

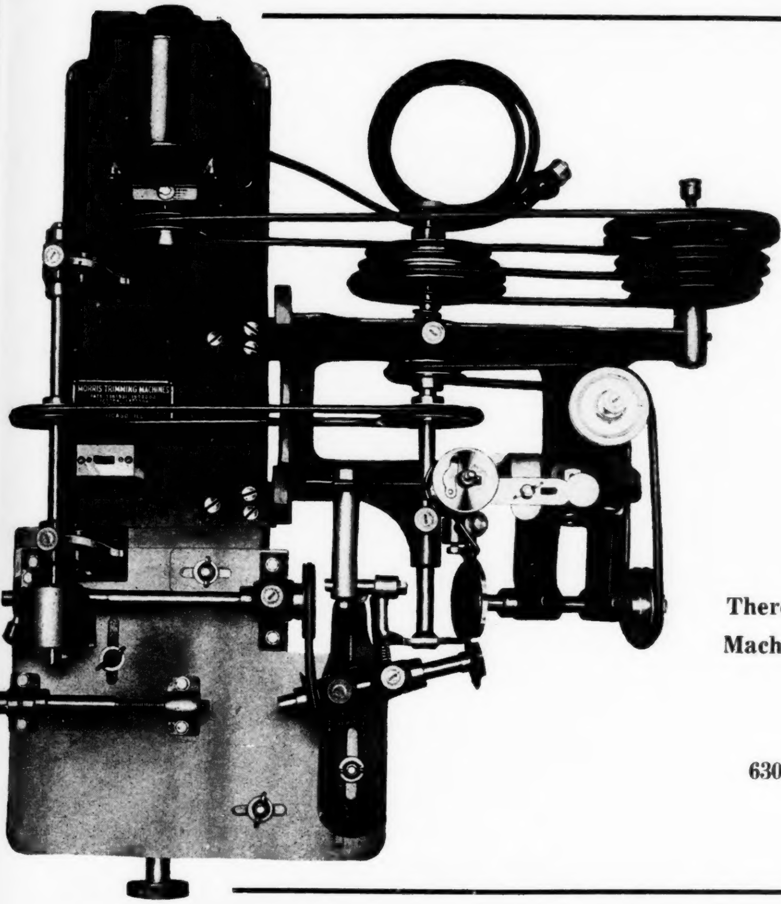
Use With Synthetic Rubbers To:

- ★ **IMPROVE PROCESSING**
- ★ **IMPROVE HARDNESS AND STIFFNESS**
- ★ **IMPROVE TEAR AND ABRASION**
- ★ **IMPROVE SHRINKAGE**
- ★ **IMPROVE TUBING OF "PURE GUM"**

THESE RESINS HAVE EXCEPTIONALLY GOOD ELECTRICAL AND WATER ABSORPTION PROPERTIES

For Details and Samples Write

MARBON CORP., GARY, IND.



T. W. MORRIS

TRIMMING MACHINES

ARE

INCOMPARABLE

Trims inside and outside SIMULTANEOUSLY

There is a MORRIS Trimming Machine for Every Trimming Job

Mail Address
6301 WINTHROP AVENUE
CHICAGO 40, ILL.

PARADORS for SYNTHETIC RUBBER ODORS

Among the problems that must be solved by processors of synthetic rubbers is the masking of disagreeable odors, which in some cases are so strong as to require special knowledge to overcome.

Givaudan has attacked this problem with highly successful results. Our special PARADORS, developed for use in synthetic elastomers, including Neoprene Latex, not only provide prompt relief at the points where it is needed but assure freedom from disagreeable odors in the finished products themselves. These PARADORS, available in a wide variety to meet practically all deodorant and reodorant needs, cover not only the odors of synthetic rubbers but the odors of other ingredients used in special products such as adhesives and molded items. They are the result of long research and specialized experience in aromatics for all purposes. Givaudan is the leader in this field. Let our staff help you solve your odor problems now—and show you how you can give your future products the appeal of odor-free quality.

"BUY WISELY—BUY GIVAUDAN"

Givaudan-Delawanna INC.

330 WEST 42nd STREET • NEW YORK 18, N. Y.

MODULEX

the HUBER

HIGH MODULUS FURNACE BLACK (HMF)

The high modulus type of furnace black has proven its distinctive value in a variety of GR-S products. It combines ease of processing with good wearing properties and low heat generation.

MODULEX, the HUBER HMF Black, is a worthy companion to WYEX, the leading channel black of today.

• PELLETIZED — Dustless!

J. M. HUBER, Inc.
460 West 34th Street
NEW YORK 1, N. Y.

HUBER

WYEX BLACK • HX BLACK • TX BLACK

May, 1945

Volume 112 Number 2

A Bill Brothers Publication

INDIA
RUBBER WORLD
NATURAL & SYNTHETIC

CONTENTS

DEPARTMENTS

MARKET REVIEWS

STATISTICS

ARTICLES

India Rubber World *assumes no responsibility for the statements and opinions advanced by contributors.*

B. BRITTAIN WILSON, General Manager

ROBERT G. SEAMAN, Technical Editor

M. J. McCARTHY, Circulation Manager

S. R. HAGUE, Managing Editor

M. A. LARSON, Production Manager

Published monthly by Bill Brothers Publishing Corp., 386 Fourth Ave., New York 16, N. Y. Chairman of Board and Treasurer, Raymond Bill; President and General Manager, Edward Lyman Bill; Vice Presidents, Randolph Brown, B. Brittain Wilson.

Subscription price—United States and Mexico, $3.00 per year; all other countries, $4.00. Single copies, thirty-five cents. Other Bill publications are: GROCER-GRAPHIC, PREMIUM PRACTICE, RUG PROFITS, Soda FOUNTAIN SERVICE, TIRES Service Station, Sales Management.

A BILL BROTHERS PUBLICATION

Copyright May, 1945
Bill Brothers Publishing Corp.

CUMATE

for

ACTIVATION WITH

CAPTAX and ALTAX

•

CUMATE when used alone is the Speed King of Acceleration.

It is also TOPS for ACTIVATING the cure when a THIAZOLE is used as the PRIMARY ACCELERATOR.

Try 1.5 ALTAX with and without 0.05 and 0.10 CUMATE on 100 GR-S and you will see why it is worth while to use CUMATE as the ACTIVATOR.

•

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York 17, N. Y.

INDIA
RUBBER WORLD
NATURAL & SYNTHETIC
Published at 386 Fourth Avenue, New York 16, N. Y.

Volume 112 | New York, May, 1945 | Number 2

Creep and Relaxation in Rubber Products at Elevated Temperatures[1]

R. D. Andrews,[2] R. B. Mesrobian,[2] and A. V. Tobolsky[2]

THE creep of rubber products under conditions of constant load and their relaxation of stress under conditions of constant extension are interesting and important problems in themselves in many applications involving the use of natural and synthetic rubbers at elevated temperatures. In addition recent studies of creep and relaxation at elevated temperatures suggest a new approach to the problem of evaluating the deteriorative changes occurring in rubbers. Although conventional aging tests such as the oxygen bomb test and the Geer oven test have proved their value as standardization methods, the results of these tests are rather hard to interpret on the basis of fundamental physico-chemical concepts. Intermittent and continuous relaxation and creep measurements, on the other hand, seem to be readily amenable to molecular-structural interpretations.

Experimental Methods

The apparatus used for measurements of relaxation of stress at constant elongation and also of changes of modulus with time ("intermittent relaxation") has been described in a previous paper,[3] where photographs of the apparatus (which was constructed by the Firestone physics research division) are also shown. In principle the apparatus is simply a small beam balance; the rubber samples, which are flat rings (2 11/16-inch outside diameter, 2 5/16-inch inside diameter) died out of cured sheet approximately 0.040-inch thick, are looped around a pulley attached to the short end of the balance beam and are extended from outside the temperature box. The moment exerted by the stretched rubber band on the short lever arm is balanced by suspended weights and a rider on the other arm of the beam. During the experiment the length of the stretched band is maintained constant to within 0.2% because the long lever arm is allowed to swing over only a very small angle on either side of the horizontal position.

The measurement of the change of modulus with time can also be made with this apparatus, and these studies have been called "intermittent relaxation" studies inasmuch as the measurements are made in exactly the same way as the measurements of continuous relaxation of stress except that the sample is elongated to the fixed length only momentarily at the time of a measurement, remaining unstretched at all other times.[4]

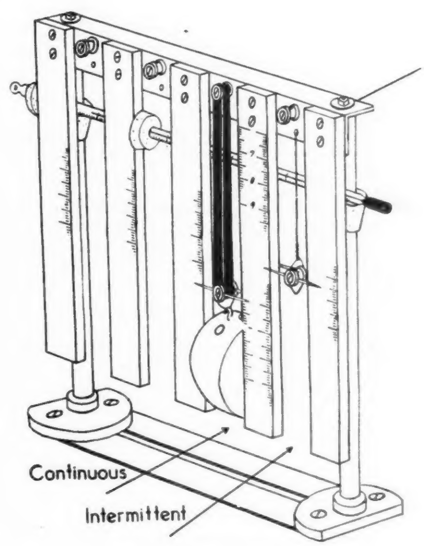


Fig. 1. Creep Apparatus

Measurements of the creep of samples supporting a constant load are made in a very simple way. A frame (shown in Figure 1) is used, which has four pulleys attached along a cross-bar at the top. The samples used are smaller rings (1⅞-inch outside diameter, 1½-inch inside diameter) died from the same cured sheets as the rings used in the relaxation measurements. Pulleys engage the bands at the bottom also and support the weights, which are hollow cylindrical copper cans whose weight is adjusted by filling with lead shot.

The samples are extended between sections of meter stick which

[1] Paper presented before the Rubber & Plastics Division, American Society of Mechanical Engineers, Hotel Pennsylvania, New York, N. Y., Nov. 30, 1944.
[2] Frick chemical laboratory, Princeton University, Princeton, N. J.
[3] A. V. Tobolsky, I. B. Prettyman, and J. H. Dillon, *J. Appl. Phys.*, 15, 380 (1944).
[4] The change of modulus with time can also be measured on creep apparatus ("intermittent creep") by applying the load to the sample only at intervals when a reading is taken, by the method shown in Figure 1. This method is in general, however, not so convenient as the "intermittent relaxation" method.

are held vertically from the top cross-bar. Two pairs of phonograph needles are set diametrically into the lower pulley and bracket the adjacent meter sticks, thus serving to indicate the elongation as well as to keep the samples in position.

Theoretical Discussion: Continuous Relaxation of Stress

According to modern structural concepts, soft vulcanized rubbers are three-dimensional networks of long chain molecules cross-linked by chemical bonds introduced during the vulcanization. The portions of the network between contiguous cross-linking juncture points are known as network chains. The changes that occur in the properties of rubber due to the effects of heat and exposure to air and light are collectively known as aging. It has been repeatedly demonstrated that aging must be considered a chemical reaction occurring in the presence of oxygen. For this reason the rubber bands used in these studies were made sufficiently thin to allow a homogeneous penetration of oxygen.

The results of the studies of continuous and intermittent relaxation and creep have demonstrated that two competing reactions are responsible for the deteriorative changes occurring in rubbers. One of these reactions is a scission of the network chains of the rubber, and the other is a cross-linking reaction. Both these reactions must be intimately related inasmuch as they occur with comparable rates over the entire temperature range. This fact suggests that the activation step for both reactions may well be the same.

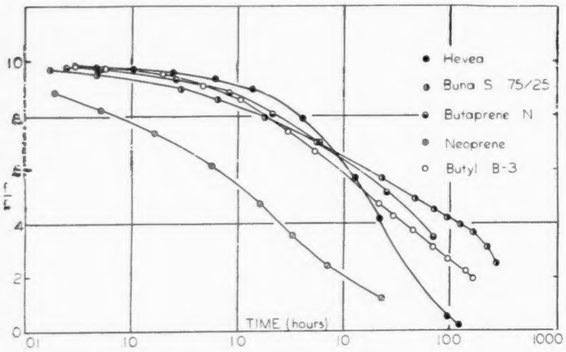


Fig. 2. Relaxation of Stress at Constant Elongation, Gum Stocks, 100° C., 50% Elongation

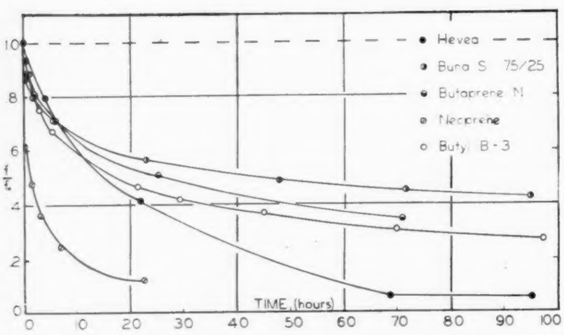


Fig. 3. Relaxation of Stress at Constant Elongation, Gum Stocks, 100° C., 50% Elongation

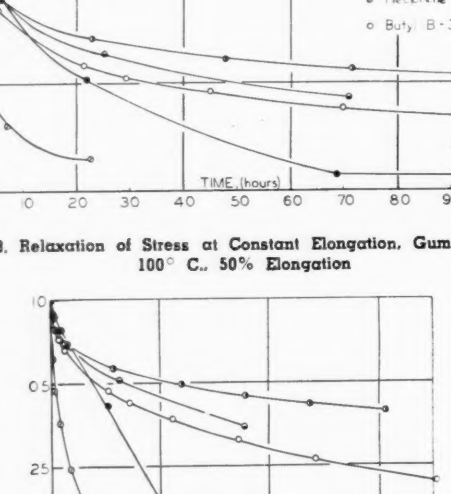


Fig. 4. Relaxation of Stress at Constant Elongation, Gum Stocks, 100° C., 50% Elongation

The measurement of relaxation of stress at constant extension at elevated temperatures provides a means of isolating the scission reaction inasmuch as cross-links tend to form in a relaxed position and so do not contribute to the stress. The decay of stress is presumed to be due to the cutting of some chemical bond in the network chains. According to the most satisfactory theory of rubber elasticity yet available, the stress is proportional to the concentration of network chains (or to the concentration of cross-linkage) in the rubber; consequently the rate of decay of stress is proportional to the rate of chain scission.

Figure 2 shows the results of stress relaxation studies on five different types of rubber. The experiments were carried out at 100° C. and 50% elongation. The ordinate is stress at any given time divided by initial stress, and the abscissa is logarithmic time. For purposes of comparison the same data are replotted in different ways in Figures 3 and 4.

It is clear from these figures that the different polymers are characterized by quite different relaxation curves. The order of rate of relaxation from the fastest to the slowest is: neoprene, *Hevea*, Butyl, Butaprene N, GR-S (Buna S 75/25).

The other facts concerning the relaxation curves are:

(1) The rate of relaxation can be slowed a thousandfold by careful exclusion of oxygen.

(2) The relaxation curves are relatively independent of elongation up to high elongations.

(3) The relaxation curves are not markedly altered by the presence of carbon black in the vulcanizate. In certain cases the presence of carbon black has a slight accelerating effect (see Figure 5); in neoprene, however, the presence of carbon black decreases the relaxation rate.

(4) The relaxation curve for *Hevea* gum follows a simple exponential decay law. The relaxation curves for other polymers can be fitted by a sum of exponential decay terms.

(5) The effect of temperature on the rate of relaxation obeys the Arrhenius law for chemical reactions: namely,

$$k' = Ae^{-E/RT} \quad (1)$$

where k′ is the specific rate, E is the energy of activation and A the so-called frequency factor. Figure 6 shows the dependence of the relaxation curve upon temperature for *Hevea* gum. The calculated energy of activation for relaxation turns out to be 30.4 kilocalories in this case.

(6) The effect of the type of vulcanization (e.g., sulphur *vs.*

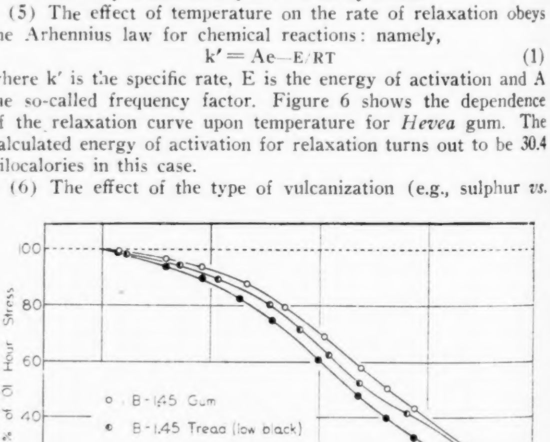


Fig. 5. Effect of Carbon Black on Stress Elongation, Butyl Stocks, 120° C., 50% Elongation

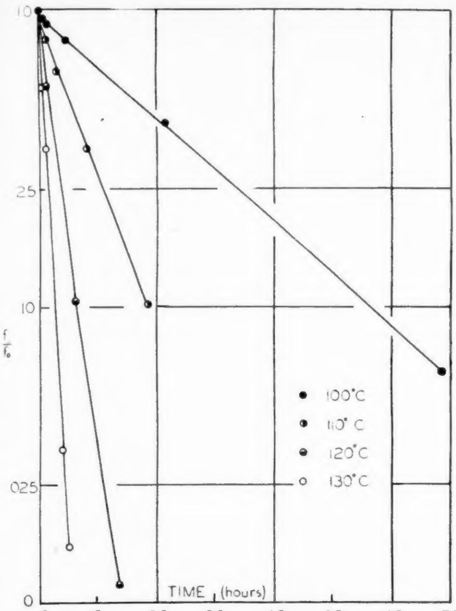


Fig. 6. Effect of Temperature on Relaxation Rate, Hevea Gum. 50% Elongation

sulphurless cures) is not so important a factor in the stress relaxation curve as the polymer type.

(7) The presence of certain antioxidants in the vulcanizate definitely retards the rate of relaxation.

Studies of Intermittent Relaxation

Figures 7 and 8 show the results of so-called intermittent relaxation of stress measurements on *Hevea* and GR-S gum and tread vulcanizates at 130° C. As previously noted, these measurements are nothing more than periodic measurements of the 50% modulus and are plotted in Figures 7 and 8 in terms of stress at time t divided by stress at zero time. It is to be noted that the intermittent relaxation curve for *Hevea* shows that the modulus definitely decreases, but in certain other experiments where the rubber bands did not rupture, this initial decrease was followed by a subsequent increase. In the case of GR-S, Figure 8 shows that the modulus increases with time. In these experiments Butyl rubber shows a continuous modulus decrease; whereas neoprene and Butaprene N, like GR-S, show a continuous modulus increase.

In terms of molecular concepts, the change of modulus with time measures the *net rate* of cross-linking and scission. For this reason the intermittent relaxation curve never decreases so rapidly as the continuous relaxation curve, even when scission is predominant as in the case of Butyl and *Hevea*. The rise of modulus with time in the cases of GR-S, Butaprene N, and neoprene indicates, of course, that in these cases cross-linking is taking place more rapidly than scission.

Creep Studies

Figures 9 and 10 show the results of creep studies on *Hevea* gum at 120° C. Figures 9 and 10 show the results plotted in the form of per cent. elongation as a function of linear and logarithmic time. It certainly is reasonable to suppose that the same chemical reactions which are responsible for stress relaxation must be responsible also for creep. A theoretical interpretation of these data[5] has indicated that creep and relaxation should be related as follows:

$$\frac{f}{f_o} = \frac{\dfrac{l_o}{l_u} - \left(\dfrac{l_u}{l_o}\right)^2}{\dfrac{l}{l_u} - \left(\dfrac{l_u}{l}\right)^2} \qquad (2)$$

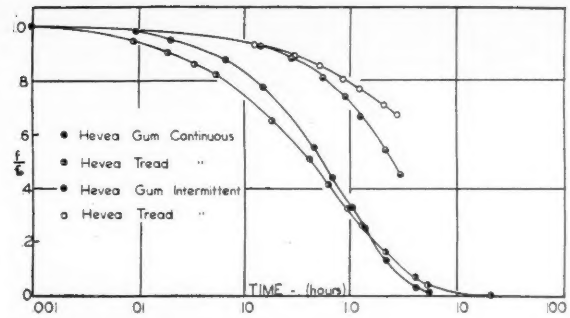


Fig. 7. Continuous and Intermittent Stress Relaxation, Hevea Stocks, 130° C., 50% Elongation

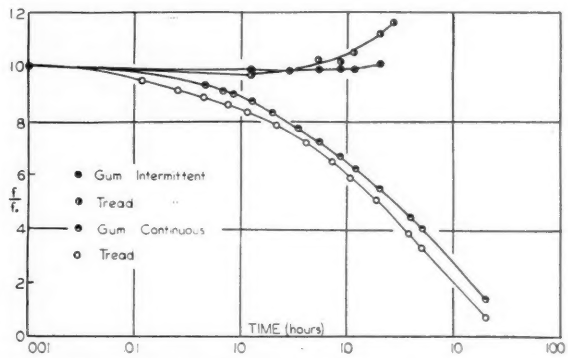


Fig. 8. Continuous and Intermittent Stress Relaxation, GR-S Stocks, 130° C., 50% Elongation

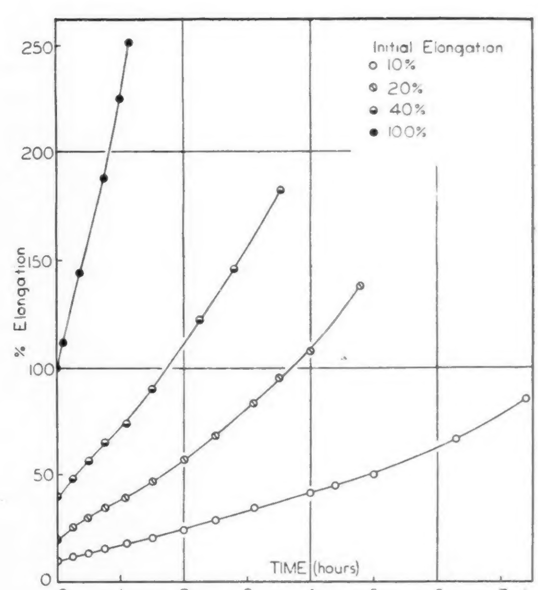


Fig. 9. Creep of Hevea Gum at Different Elongations, 120° C.

where f/f_o represents the fraction of original stress at time t in a stress relaxation experiment, l represents the length at time t in a creep experiment, l_o the initial length, and l_u the unstretched length.

It is therefore useful to define a creep function "s/s_o":

[5] A. V. Tobolsky and R. D. Andrews, *J. Chem. Phys.*, 13, 3 (1945).

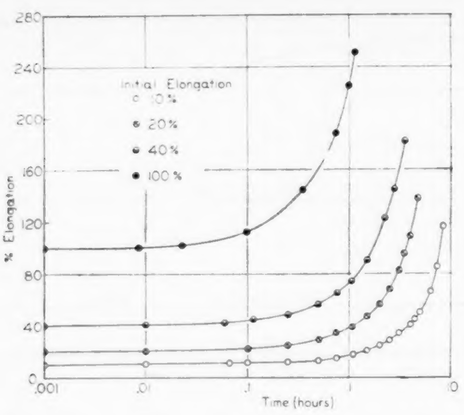


Fig. 10. Creep of Hevea Gum at Different Elongations, 120° C.

$$\frac{\text{“}s\text{”}}{s_0} = \frac{\frac{l_o}{l_u} - \left(\frac{l_u}{l_o}\right)^2}{\frac{1}{l_u} - \left(\frac{l_u}{l_o}\right)^2} \qquad (3)$$

Figure 11 shows the data presented in Figures 9 and 10 replotted in terms of the creep function against logarithmic time. The points with the appendages on these graphs represent two identical results from two different experimental determinations. The relaxation curve at the same temperature is also shown, and it is apparent from these graphs that the creep function is very nearly identical wtih the relaxation function and is largely independent of the initial elongation used in the creep measurement. The same identity of the creep and relaxation functions has been observed for Butyl gum. However, as is shown in Figure 12, creep is definitely slower than relaxation for GR-S and also for other rubbers which harden rather than soften at elevated temperatures. It is also observed that the deviation between creep and relaxation is greater in tread stocks than in the corresponding gum stocks. For example, a noticeable deviation between creep and relaxation is observed in *Hevea* and Butyl tread stocks, though such a deviation does not appear in the gum stocks.

Equation (2) has been derived on the assumption that the observed creep is due only to the scission reaction. This is largely true because at any given moment all cross-links form in a relaxed position. However, as the creep progresses, the newly formed cross-linked chains do have a retarding effect. Therefore it is not surprising that in cases where cross-linking is pronounced, the creep function is somewhat slower than the relaxation curve. Despite this effect of cross-linking, however, creep curves of different rubber stocks will show the same general differences as the continuous relaxation curves of the same stocks, and so give a general comparison of the rates of oxidative scission in various rubber stocks.

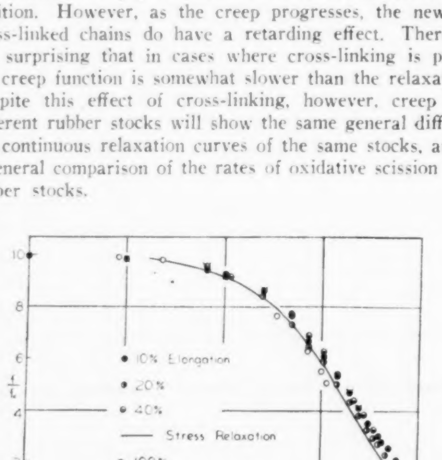


Fig. 11. Comparison of Creep Function with Stress Relaxation for Hevea Gum, 120° C.

The practical value of these measurements, apart from their usefulness in fundamental scientific research, is immediately apparent in cases where service deterioration occurs as a result of creep or relaxation. It should be remembered, however, that these measurements are carried out on thin samples in which oxidation is homogeneous. When thick samples are to be used in service, these measurements should be made on samples of the same thickness for the experimental data to have a direct relation to service deterioration. A particularly interesting practical aspect of these studies is that they show (by the great difference between intermittent and continuous relaxaion curves) that the failure of rubber products in service will depend greatly on whether the rubber is subjected to continuous or only to intermittent deformation. Failure will occur more rapidly under continuous deformation, since failure under those circumstances depends primarily on the scission reaction; under intermittent deformation failure will result from the net effect of both reactions, and changes will take place more slowly under these circumstances. The behavior of neoprene illustrates very well the value of making this distinction. Neoprene relaxes and creeps most rapidly of all the various rubber types studied. However the modulus of neoprene changes more slowly with time than is the case with most of the other rubber types (as is seen from comparison of their "intermittent relaxation" curves). Therefore neoprene will fail very quickly when under continuous load at high temperatures, but should have a longer service life than most other rubbers when used in applications which involve only momentary intermittent loading.

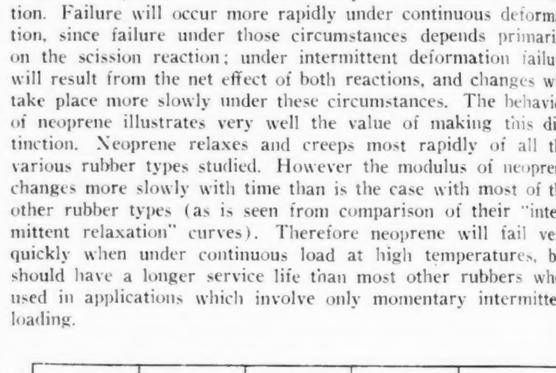


Fig. 12. Comparison of Creep Function with Stress Relaxation for GR-S Gum, 120° C.

The usefulness and importance of these measurements of creep, relaxation, and modulus are by no means limited to the measurement of high temperature oxidative deterioration in rubbers. The simple way in which they are related to molecular changes in the material being studied should make them very valuable in the study of physical changes in polymeric materials in general, such as cold flow of plastics, drift of rubbers, low temperature stiffening, permanent set, etc., since all these changes in physical properties have their basis in fundamental molecular changes of the type which are reflected in these measurements. Many new applications of these experimental methods will undoubtedly develop with increasing realization of their possibilities.

"What's New about Pine Tar." American Pine Tar & Chemical Corp., 233 Broadway, New York, N. Y. 12 pages. This booklet describes the properties, uses, and advantages of Danischewsky processed pine tars, which have not been generally available in the United States since 1929 and some of which were further developed in Europe during the past decade to answer the individual requirements of the rubber industry. It is stated that three standard grades RR, RA, and RL are designed for use by the rubber industry, and the RA and RL grades are further subdivided into numerous grades according to the type of rubber compound in which they are used or the finished properties desired. The RA and RL grades are recommended for use wtih GR-S, Buna N, and GR-I (Butyl) synthetic rubbers, with RA-SO and RA-TO grades especially recommended for use with GR-I. The RR grade is recommended for emulsifying work, and the RL grade for reclaiming purposes.

Recent Russian Literature on Natural and Synthetic Rubber—XV

M. Hoseh

Oil- and Cold-Resistant Rubber. I. Y. N. Kaplunov, "Kauchuk i Rezina," *2*, 25-26 (1940). **SN-65.**

The data found in literature on the resistance of rubber to oil and cold are contradictory. Twenty-five references are briefly reviewed.

The effect of the properties of rubber, oil, fillers, etc., on the resistance to oil and cold can be summarized as follows: (a) The effect of the nature of rubber. Mixes of natural and synthetic rubber containing no fillers harden and become brittle at —60° C. (—76° F.). Satisfactorily oil-resistant and to some extent cold-resistant mixes are obtained by combining natural rubber with divinyl rubber and chloroprene rubber. Good mixes are obtained. also from recipes containing natural and so-called "latex" rubber.

(b) Effect of oils. Oils affect rubber differently. The lower the boiling point or the lower the viscosity of the oil, the stronger is its effect on rubber. Cyclic hydrocarbons dissolve rubber more intensely than paraffinic hydrocarbons. The absorption of oil proceeds rapidly in the first few days and then slows down.

(c) Effect of fillers. Mixes containing more filler resist oil better than mixes containing less filler, but they are less cold resistant. To enhance oil resistance, the filler should have an active surface, and there should be as much of it as the product will tolerate. Best results are obtained with fillers which impart hardness, e.g., chalk, cement, etc., and with fillers inhibiting the absorption of solvents, e.g., soap, starch, talc, and animal glue (the benefit of the latter is doubtful). As a rule, fillers lower the resistance to cold.

(d) Effect of plasticizers. Plasticizers exert a profound effect on cold resistance. In compounding rubber such plasticizers should be chosen which do not lower the resistance to oil.

(e) Effect of antioxidants. Since antioxidants retard oxidation, they can be expected to enhance oil resistance. As antioxidants are recommended Neozone and AgeRite.

(f) Effect of vulcanization accelerators. On this point appears a diversion of data. Accelerators which increase the hardness raise the oil resistance, but lower the cold resistance. Accelerators that promote rapid vulcanization and increase the resilience of the product also enhance cold resistance.

(g) Effect of vulcanization. Vulcanization is the most important single factor affecting oil resistance as well as cold resistance. Vulcanized rubber is less susceptible to oil. Optimum vulcanization insures maximum cold resistance. In vulcanizing oil resistant mixes of natural rubber and "Thiokol," no sulphur is needed.

II. Y. N. Kaplunov, "Kauchuk i Rezina," *2*, 27-29 (1940). **SN-66.**

Pump cups for machinery operating under pressure or vacuum, and particularly pump cups for railroad brakes, have to withstand temperatures ranging from —50 to +70° C., and in brakes operated on spent steam the cups are exposed to temperatures of 155° C. Various mixes were tried in order to find a suitable composition for such pump cups. A mixture of 200 parts of "Thiokol" with 100 parts of rubber gave a product which swelled approximately 15.7% in spindle oil. Its cold resistance did not extend below —30° C.; at —40° C. it lost its elastic properties. "Thiokol" was therefore ruled out. Further experiments were carried out wtih chloroprene. Chloroprene recipes containing no plasticizers hardened and could not withstand temperatures below —48° C. Incorporating plasticizers into the recipe lowered the temperature limit, but increased the oil absorption. This caused no concern because tests surprisingly revealed that the strength of the specimens treated in oil increased. Thus the tear resistance of chloroprene recipes containing plasticizers (which are not specified) was: control specimens 41.3, oil treated specimen 98.5, benzine treated specimen 93.7, kerosene treated specimen 97.0 kilograms per square centimeter. The quality of pump cups was improved further by making them with several plies of a fabric. Such cups withstood temperatures of —56 to 155° C.

Determination of Barium Sulphate in Lithopone. I. G. Taranenko, "Kauchuk i Rezina," *2*, 31-32 (1940). **SN-67.**

An improved method for determining the $BaSO_4$ content of lithopone (used as filler and pigment in rubber) follows. Place a 2.5-gram sample in a 200-milliliter beaker. Add five milliliters of 10% $BaCl_2$ solution and 30-40 milliliters of 2 *N* HCl. Boil until the odor of H_2S is no longer perceptible (approximately 35-50 minutes). Filter into a 200-250 volumetric flask, and wash the filter to a negative Cl test; collect the wash water into the volumetric flask. Ignite the filter in a weighed porcelain crucible, and calculate the percentage of insoluble matter $= \frac{a-b}{100} \cdot 100$ where a is the weight of the crucible and residue, and b is the weight of the empty crucible. Determine the ZnO content on an aliquot from the volumetric flask. Calculate the percentage of

$$BaSO_4 = \frac{\%\ \text{insoluble matter} \cdot 100}{100-(ZnS+ZnO+H_2O)}.$$

Adaptation of 100% SK in Basic Products for Industry. A. P. Chelyuk, "Kauchuk i Rezina," *2*, 33-35 (1940). **S-41.**

The industrial laboratory of the Scientific Research Experimental Institute of the Rubber Industry works on the adaptation of 100% SK in new and old products required by the Soviet industry. Among such products are driving belts, belt conveyers, floating suspensions for automobiles, various automobile, and tractor details, etc.

When drive belts were first made of 100% SK, they were made with squeegees between the layers of belting to reduce the friction between the layers when the belts bend. Tested on a flexing machine, these belts proved greatly superior to the old-type belts. The minimum thickness of a squeegee interlayer is approximately 0.3 millimeter. Thus the use of squeegees in all belts is somewhat extravagant. This amounts to 950 grams of rubber per square meter of belting, or 400 grams more than was used in the old-type belts. Experiments were conducted on conveyer belts which as a rule do not travel at high speed; therefore their flexing strength is of no great importance. Good results were obtained on rubberizing belting for conveyer belts on a friction calender. This method achieved an economy of 200 grams of rubber compound per square meter of belting and yet withstood three-five hours on a flexing machine. Experiments are conducted on production of belts requiring still less strength. The production of wedge-shaped belts of 100% SK is also investigated. A new recipe (not indicated) with 100% SK was worked out for the so-called "cushion" placed in the lower part of the trapezoid cross-section. The all-SK drive belts produced in the laboratory are superior to the old-type belts. The latter had an average life of approximately 10,000 kilometers. The new SK belts showed a duration of 20,000 to 23,000 kilometers.

Another product of this laboratory is a low temperature resistant ebonite steering wheel. Although ebonite by itself is cold resistant, because of the difference in the respective coefficients of thermal expansion, this difficulty was overcome by interposing a thin layer of elastic rubber between the metal and the ebonite.

New Types of American and English Machines for the Compounding Shop. V. Galkin, "Kauchuk i Rezina," *2*, 35-38 (1940). **SN-68.**

Several types of apparatus used in the United States and England for compounding rubber are described.

(To be continued)

Synthetic Rubber Mechanical Parts In Present and Postwar Vehicles—II[1]

Ellwood F. Riesing[2]

AT EXTREMELY low temperatures, where rubber-like materials must be used, one or more of the present-day synthetic elastomers will not only out-perform natural rubber, but will also have the desirable feature of not becoming brittle at temperatures substantially below the brittle point of natural rubber. Some of the oil-resistant synthetics, such as butadiene acrylonitrile copolymer and Type-FR Neoprene, have lower brittle points than natural rubber. Emulsion polymerized polybutadiene compounds not only will excel natural rubber in having an extremely low brittle-point temperature (—100° F.), but will also out-perform natural rubber by being flexible at low temperatures. The comparatively new technique of compounding synthetic rubbers with low-temperature depressing plasticizers for extremely low-temperature operating conditions is becoming increasingly important to the design engineer, especially for the aircraft industries. Natural rubber does not lend itself, as do synthetic elastomers, to compounding with large amounts of low-temperature depressing plasticizers and modifiers without causing too serious a decrease in mechanical properties.

Low-Temperature Flexing Properties

The study of the effect of low temperatures on Young's modulus of elastomers, as conducted by J. W. Liska and F. S. Conant, of our company, has produced some very interesting data for design engineers. These studies on natural rubber, current production synthetics, and on newly developed synthetics which may be available in the early postwar years have brought out two distinct changes that take place on lowering temperature: that is, first-order transition changes or crystallization, and a second-order transition in which no change in volume occurs.

All rubber-like materials exhibit second-order transition, but only a relatively small number of materials exhibit first-order transition, or crystallization. Changes in physical characteristics resulting from second-order transition effects do not depend critically on time. Such changes in properties take place quickly and at a definite temperature. On the other hand changes in properties, resulting from crystallization may take hours, days, weeks, or longer, depending on the particular temperature employed. The temperature at which natural rubber, cured slightly below optimum, crystallizes most rapidly is about —4° F.; for neoprene (GR-M) it is reported to be about +32° F. Above and below these temperatures crystallization proceeds at a slower rate. While natural rubber in a low state of cure, and neoprene (GR-M) exhibit crystallization, the elastomers, Buna S, Buna N, Butyl, and Type FR neoprene do not.

[1] Abstracted from paper presented at the War Engineering-Annual Meeting of the Society of Automotive Engineers at the Book-Cadillac Hotel, Detroit, Mich., Jan. 8 to 12, 1945. Final paper copyright 1945 by Firestone Industrial Products Co.

[2] Chief automotive engineer, Firestone Industrial Products Co., Akron, O.

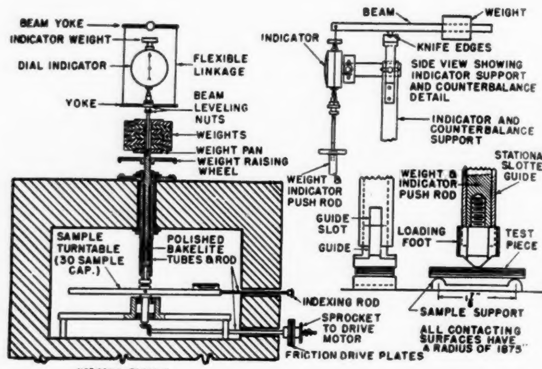


Fig. 15. Diagram of Apparatus for Measuring Young's Modulus

Young's modulus data were calculated from experimental bending observations made on the apparatus picture in Figure 14. The diagram of this apparatus, showing the working parts, is illustrated in Figure 15. This work brought out that the study of brittle point alone is to be criticized on the grounds that it fails to predict how rapidly a given material will stiffen or harden. Although the brittle point determines the temperature below which a material is no longer serviceable, it can be proved that a real difference in serviceability may exist between compounds having the same brittle point. Thus it appears that neither bending nor brittleness techniques alone are sufficient for a complete serviceability analysis. A combination of the two, however, does give all the pertinent information required by the designing engineer for a given material for a particular application. Young's modulus can be calculated by means of the well-known beam bending formula:

$$E = \frac{Wl^3}{4dbh^3}$$

Where E = Young's modulus
W = load producing a deflection, d
d = deflection produced by load W
l = distance between center lines of sample supports
b = width of sample
h = thickness of sample

The data on the same five general-utility series stocks are presented in the graphs showing the change in Young's modulus as a function of temperature, Figure 16.

On the basis of brittle-point data alone, Buna S (GR-S) copolymer would be considered more cold-resistant than natural rubber. The Young's modulus data indicates definitely, however, that the Buna S (GR-S) will stiffen at higher freezing temperatures than will natural rubber and thus become non-serviceable for some applications unless warmed up by energy absorption, heat radiation or conduction. Butyl (GR-I) and neoprene (GR-M) are charted in Figure 16 with the same brittle-point of —42° F. Notice, however, that neoprene (GR-M), which showed a lower modulus than Butyl (GR-I) at +32° F., re-

Fig. 14. Apparatus for Measuring Young's Modulus

versed position by exhibiting a very great increase in modulus as the temperature of the brittle-point is approached.

Since so much emphasis has been put on low temperature flexibility of elastomers by the aircraft industries, we are elaborating considerably on this subject in this paper. The observations made by Liska and Conant suggest that both Young's modulus and brittle-point temperature, as measured, are fundamental properties of the base elastomers, and brittle points are relatively unaffected by reenforcing materials, antioxidants, or inert fillers used as compounding ingredients.

The rate of change of modulus with time at +32° F. is shown for the neoprene (GR-M) stocks in Figure 17. These data illustrate another type of test which can be run on the apparatus described and also indicate the length of time required in studying the effects of crystallization phenomena at low temperatures.

It is well to point out here that there is absolutely no correlation between Shore durometer hardness values measured at low temperatures and brittle points. Measured at low temperatures, materials having a durometer reading even as high as 100 on the Shore A type instrument are not necessarily brittle.

The study of brittle points for low-temperature operating mechanical rubber goods parts definitely shows that the so-called general-utility compounds of various synthetic elastomers, except Buna S (GR-S) are inferior to natural rubber stocks, but that the "special-purpose low-temperature synthetics" are definitely superior to natural rubber, which enables us again to chalk up another point where one or more of the synthetics excels natural rubber. The brittle point temperatures of the compounds studied are clearly indicated directly on the Young's modulus curves for their respective stocks in Figure 16. Figure 18 carries photographic proof of what happens under shock impact at —80° F. The five general-utility series compounds molded into thin-walled semi-spheres were frozen to —80° F., along with a 50 durometer special polybutadiene, and all were subjected to shock impact in our SAE demonstration.

Emulsion polymerized polybutadiene is one of the "special-purpose low-temperature synthetics." The Young's modulus curve

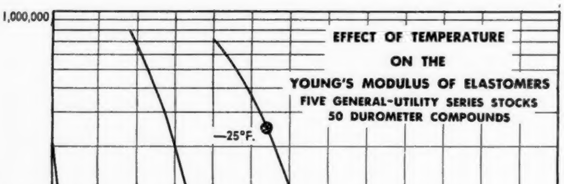


Fig. 16

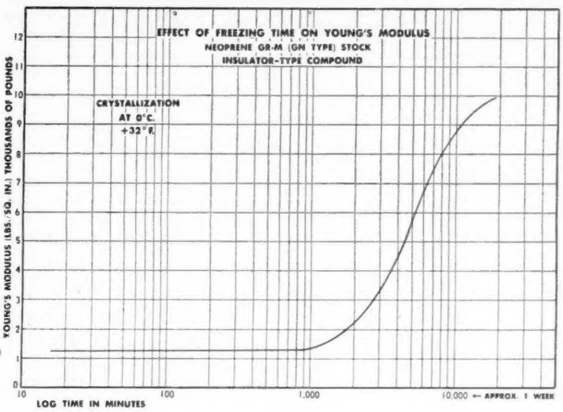


Fig. 17

for the compounded stock made of this special polybutadiene is plotted in dotted line in Figure 16 and shows it as an ideal material for use constantly at low temperatures. It should be made very clear here that polybutadiene is not a synthetic commercially available today, but if the demand is great enough, after the war, this material could probably be made available.

Some of the Buna N and Type FR Neoprene elastomers (non-crystallizing type) not only make natural rubber "take a back seat" on low brittle point, but also have the added highly desirable feature of being more oil-resistant than natural rubber. Natural rubber has a brittle point of —68° F.; whereas some of the special oil-resistant low temperature-resisting synthetic elastomers can be made to reach a brittle point of —87° F., and the special polybutadiene, non-oil-resistant, to a brittle point of —100° F.

In this chapter on low-temperature flexing properties we want to bring out a technical study of heat build-up resulting from internal friction conducted in cooperation with du Pont. Under the section, "Study of Operating Temperatures and Tension Modulus at Operating Temperatures," we referred to Figure 5, where we plotted the temperature rise of parts operating in the wind tunnel, simulating —40° F. Alaskan conditions. Heat by convection and conduction from the engine and warmer regions aided this rise in temperature of these parts. Therefore to show the temperature rise resulting solely from internal friction the apparatus photographed in Figure 19 was set up. This apparatus was housed in a heavily insulated cold box, and the shear sandwich elements, which had been preloaded at 25 lbs./sq. in. in shear, were conditioned for 48 hours at —40° F. The vertical reciprocating portion of the apparatus was then set into motion at the oscillating frequency of 1800 c.p.m. and worked through a constant amplitude of ⅛-inch (⅛-inch movement equaled 25% shear strain based on the ½-inch rubber thickness). The thermocouples anchored in the center reciprocating insert of these shear sandwiches measured a heat build-up after one minute of operation from —40° F. to —15° F. in the natural rubber, and from —40° F. to —6° F. in the neoprene (GR-M). After nine minutes of operation, the natural rubber sandwich warmed up to —5° F. and the neoprene to 0° F. Further running of this test, keeping the ambient temperature at —40° F., showed no further heat build-up in these shear sandwiches.

Resistance to Ultra-Violet Rays, Ozone, Acid, and Gas Diffusion

For any of these properties one or more of the synthetic rubbers show up vastly superior to natural rubber. Under the conditions of direct sunlight, ultra-violet radiation, and ozone as generated by corona electrical discharge and by other means, natural rubber deteriorates very rapidly. The special compounding of natural rubber with protective waxes, special reenforcing blacks, and antioxidants retards this deterioration to some extent. However natural rubber is definitely labeled as being very poor for resistance to sunlight, ultra-violet radiation, and ozone. Here again some of the synthetic elastomers are better than natural rubber by several thousand per cent. in life under these conditions. Figure 20 shows actual photographs of the five general-utility series 50 durometer compounds following their

Fig. 18. Results of Shock Impact at —80° F.

exposure for three minutes to concentrated ozone. Neoprene (GR-M) and other chloroprene elastomers also Butyl exposures to practically unaffected even after unbelievably long exposures to ultra-violet radiation and ozone. Resistance to ozone and corona failure is all-important for ignition distributer gaskets, distributer harness boots, ignition wire covering, sun-exposed windshield wiper blades, and sun-exposed windshield and window seals.

Both neoprene and Butyl provide amazing resistance to acids when compared with natural rubber. Figure 21 illustrates the effects of concentrate sulphuric acid on Butyl and natural rubber after ten days' immersion at room temperature.

The resistance to diffusion of air and gases is of the utmost importance for numerous applications on aircraft, seagoing craft, life rafts, and on some automotive and bus requirements. Here again both Butyl and neoprene are more highly impermeable than natural rubber to air and gases such as carbon dioxide, helium, hydrogen, Freon, etc. This outstanding property will be fully exploited in postwar parts for all types of crafts and vehicles.

Electrical Resistivity

The dissipation of static charges generated in dozens of manners in trucks, buses, and aircraft are all important. Static charges are built up in flights by the flow of air sliding against airplane bodies which, if not controlled, would reduce the efficiency of deicing equipment by the static charge puncturing the rubber deicer. The flow of gasoline through the fuel line hose generates a static charge. Tests show that on lightly pigmented compounds the synthetic elastomers are much better conductors of static charges than similarly loaded natural rubber compounds, bringing to the front another mark of merit for synthetic rubbers.

Resistance to Oils and Coolants

There are hundreds of applications of mechanical rubber goods parts on automobiles, trucks, tractors, and airplanes, where resistance to oils and coolants is absolutely essential. Under these conditions of intimate contact with oils we can state with no hesitancy whatsoever that natural rubber is an inferior material and could not possibly give satisfactory performance; whereas several of the synthetic elastomers have been giving outstanding performance over long time intervals.

With the proper selection of the synthetic elastomer, this outstanding performance can be obtained under long exposures, to mineral oils, vegetable oils, animal oils and coolants.

In our discussion on resistance to mineral oils, we are compelled to classify these oils on the basis of their aniline point. High aniline point oils (the 100% paraffin base group) are comparatively more deteriorating to the Buna N elastomers than to the neoprene types. These oils of high aniline point extract the plasticizers used in the Buna N compounds and therefore reduce appreciably the compound's physical properties. This extraction of plasticizers in some cases actually causes a slight shrinkage in volume of the parts and, on prolonged exposure, almost completely takes away the rubber-like characteristics of the compound. This condition, of course, is hastened at elevated temperatures.

The low aniline point mineral oils (naphthenic-base group) affect the Buna N and neoprene elastomers in the opposite order from high aniline point oils. In other words the low aniline point oils are more destructive to the neoprene elastomers than they are to the Buna N. The naphthenic-base group low aniline point oils also leave their brand by producing relatively high swell, but they do not appreciably affect the physical and rubber-like properties of these synthetic elastomers. The effect in this case again is hastened at elevated temperatures.

Figure 22 pictures the molded ring gaskets that were exhibited in our SAE demonstration to show the rapid action effect of a low aniline point mineral oil on the five basic compounds referred to in this paper. You will observe that the oil did not appreciably affect the Buna N in volume change or in physical properties. The neoprene elastomer showed that its tensile strength was not materially affected although there was a susbtantial increase in volume.

It is well to bring out here a few interesting examples where one of the synthetic elastomers that is not normally considered oil-resistant at all does have wonderful resistance to some of the vegetable oils. Butyl (GR-I) is practically unaffected by soya bean oil as used in automobile paints. A 90-day immersion test showed absolutely no volume increase or loss of physical properties of the Butyl compound. As a check, natural rubber under these conditions lost its physical properties appreciably and increased in volume 200%.

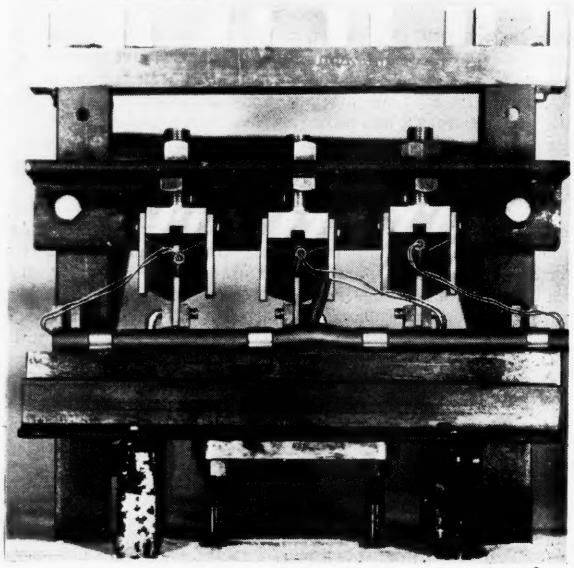


Fig. 19. Apparatus for Measuring Internal Friction

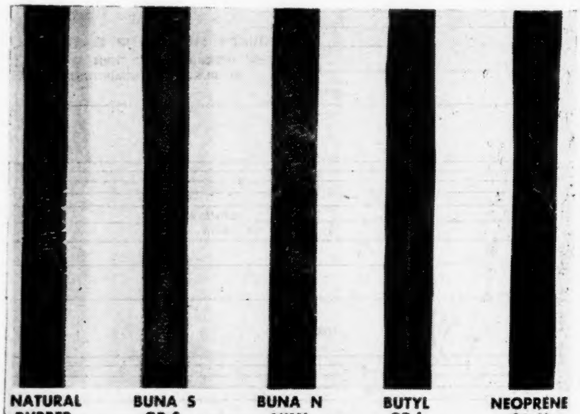


Fig. 20. Condition of 50 Durometer Five General-Utility Series Stocks after Three-Minute Exposure to Concentrated Ozone Atmosphere

Fig. 21. Result of 10 Days' Immersion at Room Temperature in Concentrated Sulphuric Acid on Natural Rubber and Butyl (GR-I)

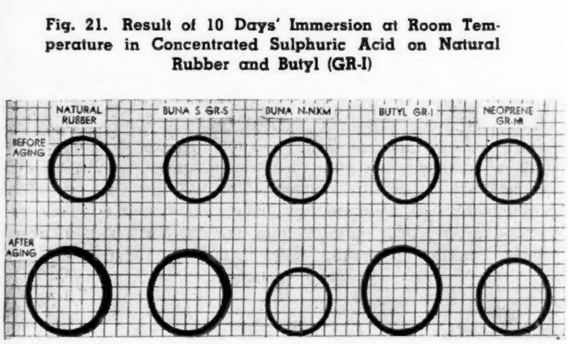


Fig. 22. A Before and After Photograph Showing Effect of Low Aniline Point Naphthenic-Base Oil on Molded Ring Gaskets Made of the Five General Utility Stocks

The effect of coolants on synthetic elastomers is somewhat varied, depending upon the type of coolant and the minor ingredient used in the coolant mixture. Simple alcohols, generally speaking, have little effect on the physical properties of the synthetic elastomers referred to in this paper. The glycol types, however, ethylene glycol or Prestone, do not in themselves materially affect the physical properties, but since they may operate at high temperatures, owing to higher boiling points and therefore transmit greater heat, the physical properties of the compounds will be impaired. The frequent presence of rust inhibitors, sulphonated oils, and other hydrocarbons produce deterioration out of all proportion to the quantities used. The Buna N copolymers and neoprenes can be very effectively compounded to resist the action of generally used coolants or coolant mixtures.

Study of Static Compression and Shear Modulus, and Dynamic Compression and Shear Modulus, at Low Frequencies (Free Vibration)

Knowledge of every one of these properties is essential to the designing engineer in developing successful yielding or deforming devices working in comparatively low frequency range. All of these properties can be measured on the Yerzley oscillograph at room temperature as well as at elevated and depressed temperatures.

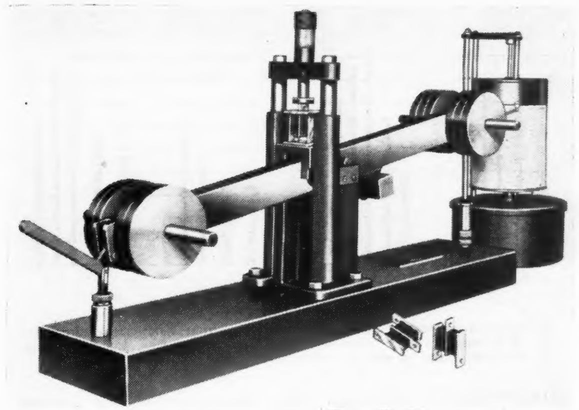


Fig. 23. Yerzley Oscillograph

In Figure 23 is pictured the Yerzley oscillograph fitted with an adapter to accommodate a shear sandwich test element enabling the device to be employed for the shear study of vulcanized compounds, thereby greatly increasing the investigation scope of this apparatus.

This is the first publication, to the author's knowledge, wherein reference is made and illustration shown of Dr. Yerzley's shear test adapter for the oscillograph. Figure 24 carries in bar graph form the results of the shear sandwich study conducted on the five Firestone stocks. (To keep this chart from becoming too complex, we have shown only the values obtained at one temperature.) The study of the shear characteristics of these five vulcanizates compared by the "Yerzley Index of Efficiency" shows neoprene (GR-M) a few percentage points better than natural rubber, and Buna N approximately equal to natural rubber; whereas Butyl (GR-I) and Buna S (GR-S) are lower in this respect. The author has used the longer, more descriptive term, "Yerzley Index of Efficiency," although, probably for brevity, Yerzley and other investigators have used the term "resilience."

A comparison of the static shear modulus values under 20% shear deflection shows neoprene (GR-M) as being slightly stiffer than natural rubber, but Buna S (GR-S) and Buna N being considerably stiffer. However Butyl (GR-I) showed the lowest static shear modulus value of the synthetic and was lower than natural rubber.

The dynamic (free vibration) shear modulus of all of the synthetic elastomers of this group shows higher values than that of natural rubber; neoprene (GR-M) and Butyl (GR-I) have the lower moduli, and Buna S (GR-S) and Buna N have higher moduli values than natural rubber, and Buna N is the highest or stiffest of all of the five stocks. It should be remembered that with any compounds these values at elevated or depressed temperatures do not necessarily follow the same order. These values will cross over in a manner similar to that shown with the ball rebound device in the section on "Resilience."

It must be pointed out here that in measuring the dynamic modulus at free vibration or natural frequency each of the five general-utility compounds has different natural frequencies although their hardnesses are all identical. The respective natural frequency values are also plotted in this same graph, Figure 24.

An analysis of the "Yerzley Index of Efficiency" in the compression studies of the five general-utility series 50 durometer compounds in Figure 25 shows neoprene (GR-M) and Buna N practically identical with the natural rubber; whereas Buna S (GR-S) and Butyl (GR-I) are considerably lower in this property, as was also revealed in the shear study of this same index.

Under the static compression modulus at 20% deflection neoprene (GR-M) and Buna S (GR-S) have higher (stiffer) values compared with natural rubber. The Buna N is shown to have a

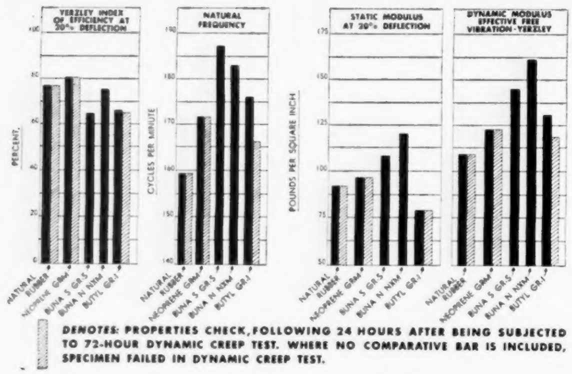


Fig. 24. Yerzley Oscillograph Shear Study of the Five General-Utility Series Stocks. (Tested at Room Temperature)

greatly stiffer static modulus than the natural rubber. However Butyl (GR-I) is extremely low in this measurement.

The dynamic (free vibration) compression modulus values as bar graphed in Figure 25 show a different order than the shear study revealed with the shear sandwich specimen. In this compression study Butyl (GR-I) has a lower modulus than natural rubber, and neoprene (GR-M), Buna S (GR-S), and Buna N are all higher than natural rubber.

For the designer we want to explain here that the compression modulus is dependent on whether or not the specimen is adhered to non-elastic material on the load carrying areas. It is also dependent on the shape factor. Actual designs of compression load carrying elements for long life should have their loaded deflection limited to 20% of the initial free height. The static compression modulus values are therefore given at 20% compression in the Yerzley oscillograph study. We wish to point out here also that for any compound the static modulus values are not to be confused with a constant spring rate, inasmuch as the stress-strain curves are not straight lines or linear functions any more than are the tension stress-strain curves shown in Figures 1, 2, 3, 6, 7, 8,[3] and they change with temperature, as is also indicated in these same tension curves.

The static shear modulus values decrease with increasing static strain in the low-strain working region of the stress-strain curves and are likewise not linear functions, and they also change with temperature as expressed above.

Figure 24 carries reference to the shear property check, on the shear sandwich specimen, following 24 hours after subjection to a 72-hour dynamic creep test. The neoprene (GR-M) and the natural rubber compound showed no measurable change in physical properties of the sandwich tested on the Yerzley oscillograph. The Butyl rubber compound was changed considerably by the 72-hour dynamic creep test, and these measured differences of the Butyl compound are shown in the cross-hatched area adjacent to the solid bars that indicate the properties measured before the vulcanizate was subjected to this test. The Buna S (GR-S) and the Buna N failed, owing to fatigue flex; therefore the change in properties could not be studied. Several samples failed under this test, proving the inability of these two compounds to withstand this extreme dynamic flex test. The apparatus used for this dynamic test is photographed in Figure 26. The five general-utility series 50 durometer compounds which were vulcanized into the shear sandwich elements for this test were loaded in shear by means of a beam and weight to 25 lbs./sq. in. and then flexed through a ⅛-inch amplitude for 72 hours at room temperature (the apparatus lends itself also to elevated and depressed temperature flexing studies). The check on property changes was measured for 24 hours after removal from the apparatus.

[3] See INDIA RUBBER WORLD, Apr., 1945, pp. 59-64.

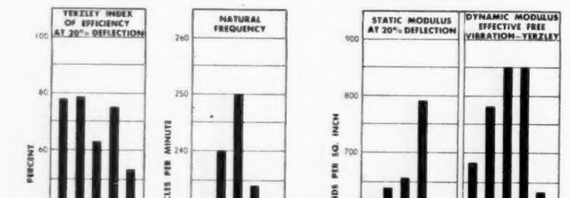


Fig. 25. Yerzley Oscillograph Compression Study of the Five Firestone Stocks Used (Tested at Room Temperature)

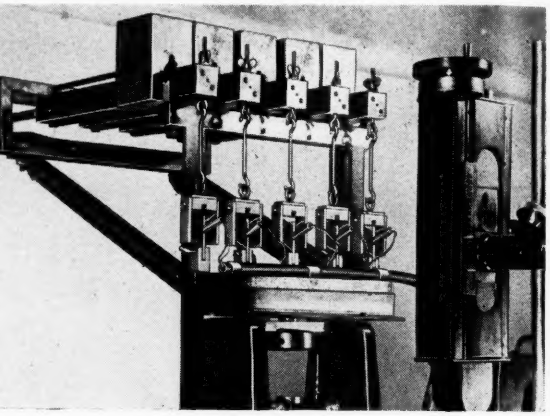


Fig. 26. Apparatus for Dynamic Creep Test

The internal friction heat build-up data accumulated during this test run brings out some rather interesting facts, some of which are diametrically opposed to popular belief. The natural rubber compound actually built up a higher temperature due to internal friction, than did the neoprene (GR-M) stock. The Buna S (GR-S) showed a temperature rise 100% greater than natural rubber, and the Buna N, 50% greater. Butyl (GR-I) with its extremely high internal friction showed a build-up 150% greater than the natural rubber. This test not only shows the flexing ability of neoprene, but brings out that one of the synthetics has less heat build-up from internal friction than natural rubber, chalking up another point in favor of a synthetic.

(To be concluded)

Sepco Safety Ear Protectors

Noise Absorbing Ear Protectors

SEPCO safety ear protectors, of molded rubber construction, slide snugly and easily into the ear canal with the flange maintaining the correct position. Sealed into the ear protector are fine rubber granules which are said to be effective in absorbing noise in the high frequencies before reaching the ear drum. Lower, slower frequencies are carried through, permitting the wearer to hear conversation almost normally. Under audiometric tests Sepco protectors have shown an absorption of from 40 to 50 decibels in the high frequencies and from 15 to 30 decibels in the low frequencies. Ventilation to the inner ear is provided, and no pressure builds up behind the protector. The protectors are packaged in a compact three-compartment plastic case; the center compartment contains an antiseptic lubricant which aids insertion into the ear canal and comfort in wearing. Industrial Products Co.

WPB Rubber Bureau 1944 Year-End Report

1. Increased production of tires and tubes represents the number one war production problem. To meet this problem two specific actions have been taken: first, a concentrated drive to man fully the industry and, second, expansion programs which will increase the potential capacity of the industry from approximately 4,000,00 truck tires per quarter to approximately 7,000,000 truck tires per quarter.

2. The translation of the increased tire and tube program into crude and synthetic rubbers has again made crude rubber the most critical of all strategic materials.

3. The greatly increased synthetic rubber requirements for the tire and tube program can be met by comparatively small additions to the synthetic rubber plants plus the necessary increased amounts of feed stocks and chemicals, with sufficient manpower to operate the plants at the increased production rate.

4. The impact of a greatly increased tire and tube production schedule has created shortages in certain important components: namely, rayon and cotton tire cord, carbon black, and bead wire. The production of each of these components must be increased if the production goals for tires and tubes are to be realized.

5. The machinery and equipment required for the tire and tube expansion program must be given the highest priority, must be expedited to every extent possible and the pool and other orders covering same liquidated with the equipment and machinery delivered on or before June 30, 1945.

6. Production of other short supply rubber goods must be expedited by supplying manpower where manpower is needed, or textiles where textiles are needed, and through the expediting of such expansion programs as may pertain to the individual item. Amongst these other rubber products are included hose, belting, footwear, soles and heels, etc.

7. The manpower drive must be continued with all impetus, a thorough follow-up continued on Army and Navy personnel furloughed to the program and the problems of draft deferment geared to the over-all problem.

8. There must be a continuation and an extension of the conservation policies designed to obtain the last mile from every existing tire. This obviously includes a coordinated policy of factual information release and an avoidance of misleading statements as to the availabiilty of tires to the public.

9. The tire program for 1945 calls for tremendous effort on the part of the industry, labor, and many government agencies. Close cooperation and a mutual understanding of the tasks ahead are essential if production is to meet or exceed schedules.

General

On September 1, 1944, a Rubber Bureau was established in the War Production Board to assume the majority of the functions of the Office of Rubber Director. By Executive Order, the responsibility for the production of synthetic rubbers and the research and development pertinent to same was transferred to Rubber Reserve Co.

The Rubber Survey Committee Report, better known as the "Baruch Report," had been the textbook for the Office of Rubber Director. The change of one word in each of the following two sentences from the Baruch Report gives a poignant definition to the rubber problem of today:

"But if we fail to secure quickly a new (rubber) *tire* supply our war effort and our domestic economy both will collapse. Thus the (rubber) *tire* situation gives rise to our most critical problem."

In November, 1944, the military submitted requirements for the first quarter of 1945 far in excess of previous estimates for that period. It was recognized that these new requirements were in excess of the maximum capacity of the industry. The Rubber Bureau has developed new schedules which will produce the required number of truck and bus tires in the minimum time. When these expansion projects are in full capacity, over 28,500,000 truck and bus tires per year can be produced. This figure is believed adequate to cover the essential requirements of all claimant agencies.

Truck Tire and Tube Production

History: During 1943 an expansion program for the tire and tube industry was initiated by the Office of Rubber Director which was designed to offset such production losses as experience at that time indicated would result from the use of synthetic rubber. The extent of this program gave full consideration to the tire and tube requirements then envisioned. Approximately $100,000,000 was involved in this expansion. With minor exceptions it was financed by the industry with tax amortization certificates.

In the Spring of 1944 the requirements of the military for large tires made necessary a further expansion known as the high flotation program. The need of these extremely large tires was dictated by the changing methods of conducting the war. The requirements were expressed in quantities far beyond the ability of the industry to produce. It was believed that the completion of these two programs would provide the facilities necessary to produce by size and type all truck tires required for either military or essential civilian purposes.

The first expansion program was largely completed during the closing months of 1944, and the high flotation program will be completed prior to the conclusion of the first quarter of 1945.

Current Situation: Military requirements for the fourth quarter of 1944 substantially exceeded the estimate projected for the period. The Rubber Bureau recognized that these totals could not be met in the fourth quarter, but felt certain that upon completion of the scheduled programs, minor additions and full manpower would provide the production necessary to meet the levels required should demand continue in the first quarter of 1945 at fourth-quarter levels. In November of 1944 new requirement figures for the first quarter of 1945 were filed with the Rubber Bureau. These requirements represented totals that bore little relation to prior estimates. It was obvious that drastic action would have to be taken to provide the United Nations with tire and tube facilities which the war experience had dictated as absolutely essential.

Production estimates were obtained from the tire and tube industry to reflect their maximum production by size and type from installed facilities, including additional equipment then on order due to be delivered in the near future. The estimates assumed that manpower would be made available to operate production equipment at full capacity. They also assumed that new equipment would be delivered as scheduled and that there would be no shortages in the component materials required for production lines. An analysis of these figures indicated that the facilities of the industry were inadequate to meet the latest stated needs of war. Industry meetings were held and a new tire expansion program was developed. This program falls into two specific parts: (1) expansion within-existing-walls or with minor additions to floor space; (2) new plants.

The expansion within-existing-walls or with minor additions to floor space balanced the facilities of the industry to produce tires and tubes. It represented an actual maximum production which could only be exceeded by the addition of entirely new plants to the industry with due allowance for the present efficiency of production from existing equipment. The completion of the first phase of the program would give an industry potential of approximately 5,600,000 truck tires per quarter. As this amount was inadequate to meet requirements, it was determined to obtain at the earliest possible date 1,500,000 additional truck tires per quarter through the building of such new plants as might be required to bring industry capacity to a total of 7,100,000 truck tires and tubes per quarter.

The new program included a reasonable insurance factor beyond the number of tires and tubes actually stated as required during the first quarter to do the essential military and civilian job of conducting an all-out war. Requirements for the second quarter have now been presented. They are considerably higher than had been anticipated. If the expansion program needed further justification, the new statements of requirements prove the necessity of the program. Whereas the meeting of requirements for tires and tubes is the major objective, the expansion program has an important corollary: namely, to liquidate the accumulated deficits resulting from failure currently to meet requirements. The military have cooperated toward the most efficient use of the tires and tubes allocated to them. Their allocations are, however, below requirements and, if not corrected promptly, may prejudice the conduct of the war. The civilian economy has been held to a minimum of tires and tubes. Failure to provide promptly a greatly increased flow of tires and tubes to civilian activity will curtail or stop many auxiliary functions essential to the production lines of this country.

The entire program was approved in late December by the War Production Board and received the concurrence of the Production Executive Committee of the War Production Board.

Each company currently producing truck tires and tubes was asked to participate in the expansion. The program was oversubscribed by the industry. After due consideration of all factors, individual allocations were made, and confirmation was received from the companies. The projects in large measure have been filed, and work on many of them is already under way.

Truck Tire Production Schedule: The Rubber Bureau has scheduled a minimum quarterly production goal for tires and tubes which covers both 1945 and 1946. The following tabulation outlines this schedule by tire groups for 1945. Inasmuch as detailed requirements will doubtless be changed during the year, no group tabulation is given for 1946. However, when all projects in these expansions are completed, it is anticipated that maximum production will be in excess of 28,500,000 truck and bus tires per year.

Truck Tire Production Schedule—1945
(U. S. A. Manufacture)

Tire Group	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Year
A-1	31,175	28,975	26,475	24,875	111,500
A-2	13,005	15,005	15,605	15,605	59,220
A-3-a	104,167	183,672	205,028	212,028	704,895
A-3-b	914,492	1,101,518	1,234,658	1,439,658	4,690,326
A-4	734,294	947,455	1,152,407	1,457,407	4,291,563
A-5	1,923,556	2,180,996	2,512,361	2,516,861	9,133,774
A-6	1,155,262	1,269,050	1,305,824	1,305,824	5,035,960
Total	4,875,951	5,726,671	6,452,358	6,972,258	24,027,238

Owing to the urgency of the situation every possible effort is being made to exceed first-quarter goals by the greatest possible margin.

Review: To appreciate the problem which has been placed upon the tire and tube industry, it is necessary to review what the industry has done in the past and compare it with what it is being called upon to do in the future. Exhibit "A" shows the total production of tires from truck building facilities from 1936 through 1944 with the levels projected for 1945 and 1946. The average prewar year saw approximately 8,000,000 tires produced on these facilities. The year 1944 saw 16,000,000 tires produced. These totals include large airplane and rear tractor-implement tires as well as the truck and bus tire groups given in the preceding table for 1945 scheduled production.

The comparison is even more striking when it is realized that the average truck tire of today is substantially greater in size and weight than the average truck tire of a prewar year. Exhibit "B" shows this latter point in its portrayal of milled stock used in the production of these particular tires. With an average milled stock of slightly over 200,000 long tons in prewar years, 1944 showed slightly over 600,000 long tons consumed in the production of these particular tires. These increases in 1944 take on even greater importance when it is realized that in 1944, 85% of the raw material consumed was synthetic rubber. In other words, the industry has taken a new series of raw materials and, despite the almost insuperable problems involved, has nearly trebled the quantity of milled stock used in the production of truck and bus, large airplane, and rear tractor- implement tires.

Passenger-Car Tires

Owing to shortage of cotton cord, carbon black, and bead wire, it has been necessary to curtail the scheduled production of passenger-car tires. Increased demands for truck tires have had their reflection in the increasingly tight position of the components required in tire production. Passenger-car tire production has therefore been tied to the availability of cotton tire cord, and each producing company has been given a quota of cotton tire cord as the limiting factor in its passenger-car tire production. Slightly less than 5,000,000 passenger car tires will be produced during the first quarter of 1945. Production schedules for subsequent quarters probably will remain the same, but will be determined by the availability of facilities, manpower, and components, which in turn are directly influenced by truck tire requirements and the ability of the industry to meet the latter. To reflect the lowered production of passenger-car tires, the January quota given the Office of Price Administration was cut to 1,800,000 and the February quota has been established at 1,600,000 tires.

Whereas it is believed that the production of passenger-car tires at current levels

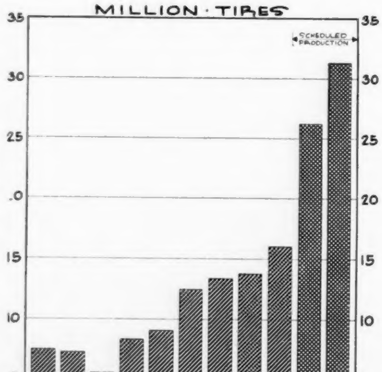


Exhibit "A." Total Production from Truck Tire Building Facilities by Years, 1936-1946 (Including Truck and Bus, Large Airplane and Rear Tractor-Implement Tires)

will be adequate to meet the most essential demands from B and C card holders, it is realized that a serious shortage impends unless all conceivable conservation measures are practiced by the individual motorist. The attached Exhibit "C" shows passenger-car tire production from 1936 to date. In 1944, 18,864,000 passenger-car tires were produced. Inasmuch as only a relatively small number were required by the military, it was possible to release 17,475,000 passenger-car tires to the Office of Price Administration for rationing to essential civilian use during the year. As a result of motorist cooperation to obtain the last mile of travel from existing tires and the careful job of screening applications by the tire inspection stations and the local rationing boards, there was no accumulation of applications for passenger-car tires from B and C card holders awaiting release of more tires on December 31, 1944.

Whereas 1945 and 1946 show increasing production levels over those achieved in 1944, it is improbable that they will be realized unless the factors heretofore listed as determining passenger-car tire production show radical change. The valley of supply between 1941 and 1946 represents an accumulating deficit to be made up to achieve normalcy in the supply-demand position for passenger-car tires.

Crude Rubber and Conversion to Synthetic Rubbers

During the Summer of 1944 new supply and consumption of crude rubber were approximately in balance. Relatively small net withdrawals were made on the stockpile during 1944. Last year the production schedules for 1945 contemplated only minor drains upon the stockpile, and it was believed that the supply would be adequate. Present production schedules have changed this picture, and *crude rubber once again becomes the most critical of all strategic materials.*

The conversion program from crude to synthetic rubbers has progressed to a point where further conversions are relatively minor, both in number and in the quantities of crude rubber involved. They are, however, being followed diligently and will be made effective immediately the technological problems are solved.

Present production schedules in 1945 will consume approximately 144,000 tons of

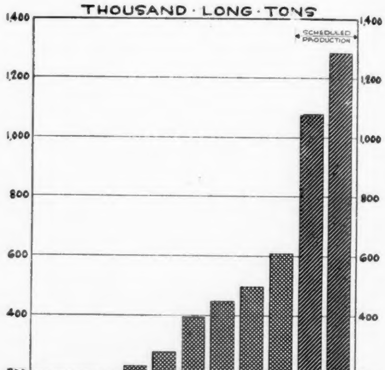


Exhibit "B." Finished Milled Stock Required for Tires Built on Truck Tire Facilities by Years, 1936-1946 (Including Truck and Bus, Large Airplane and Rear Tractor-Implement Tires)

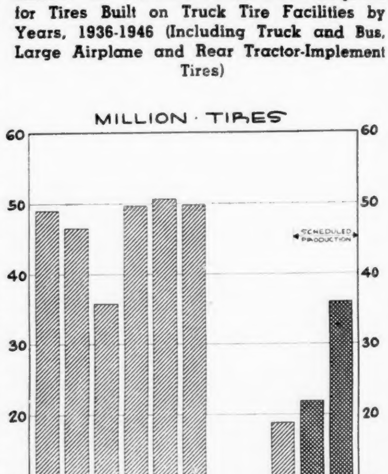


Exhibit "C." Total Production of Passenger Car and Motorcycle Tires by Years, 1936-1946

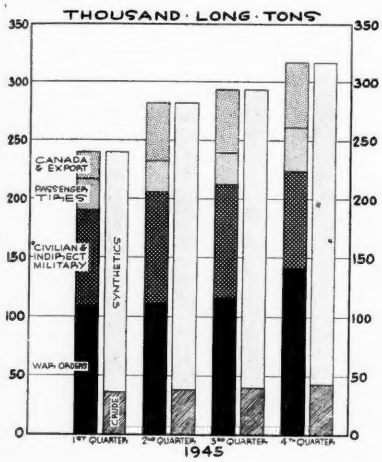
crude rubber, resulting in a net stockpile loss for the current year of approximately 35,000 tons. Inasmuch as the United States

stockpile position as of January 1, 1945, was approximately 96,000 tons, it will decline to approximately 61,000 tons as of January 1, 1946. The crude rubber situation becomes even more critical in 1946.

Synthetic Rubbers

Statements of requirements for all types of synthetic rubber have been filed with Rubber Reserve Co. These requirements have been broken down by types of synthetic rubber and by quarters during 1945 and 1946.

There is insufficient GR-I (Butyl) to meet over-all tube requirements. The deficit will be made up by substitution of GR-S. Production estimates indicate, however, that there will be an adequate supply of Butyl to meet *airplane and truck* tube requirements for military and essential civilian needs. The Rubber Bureau does not feel justified in requesting new Butyl plants to meet the requirements for tractor



* Other than passenger tires.

Exhibit "D." 1945 Production Plan Showing Projected Consumption of Crude and Synthetic Rubber, United States and Canada, by Quarters

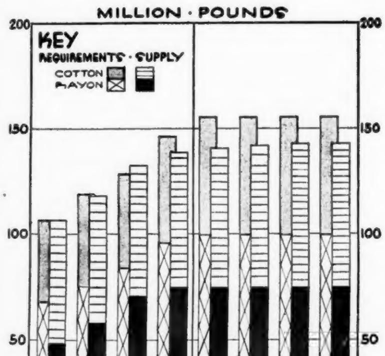


Exhibit "E." Rayon and Cotton Tire Cord Requirements and Supply, 1945-1946, Estimated by Quarters

and implement, industrial, passenger, and bicycle tubes, but has asked that all within-plant expansions be made to achieve maximum production.

We are advised by Rubber Reserve Co. that the required quantities of GR-M (neoprene) and GR-S can be produced provided the plants are supplied with adequate feed stocks and additional manpower for the much larger tonnage to be turned out in 1945 and 1946. Production in 1944 and the requirements for 1945 and 1946 are shown below:

	1944 Production	1945 Requirements	1946 Requirements
GR-S ...	668,834	881,000	1,054,000

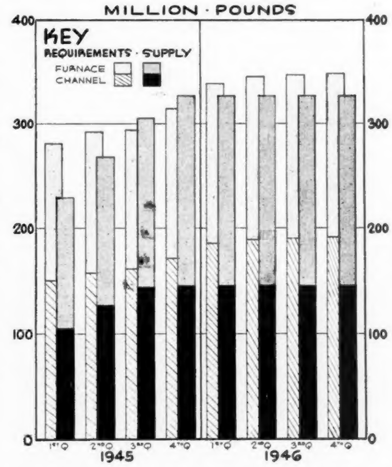
The increased GR-S requirements in the last half of 1945 and 1946 are substantially beyond the present capacities of the copolymer and raw material plants, and additions to the plants will be necessary, amounting in cost to about 3% (about $22,000,000) of the presently estimated investment in the government-owned synthetic rubber plants of $725,000,000. The rated capacity of the government GR-S plants is 705,000 long tons per year, and the plants have demonstrated actual capacity of 860,000 long tons per year. The requirement for 1946 of 1,054,000 long tons is 22.5% over the present demonstrated capacity and 49.5% over the rated capacity of the plants.

It is indeed fortunate that the synthetic rubber plants have demonstrated a flexibility in production and an ability to produce substantially over their rated capacity, so that with comparatively small additions an output up to nearly 50% over their rated capacity can be counted on for 1946 if needed.

DATA FROM EXHIBIT "G." SUPPLY OF RUBBER *vs.* REQUIREMENTS—UNITED STATES AND CANADA—1943-1945

In Thousands of Long Tons

	1943 Quarters				1944 Quarters				1945 Quarters				Year Totals		
	1	2	3	4	1	2	3	4	1	2	3	4	1943	1944	1945
REQ'TS															
TOTAL ..	111	119	138	174	197	212	211	234	240	282	294	317	542	854	1,133
Synthetics.	8	19	56	112	147	170	178	202	204	244	254	274	195	697	976
Crude ...	103	100	82	62	50	42	33	32	36	38	40	43	347	157	157
SUPPLY															
TOTAL ..	30	43	80	137	186	238	228	255	268	283	289	303	290	907	1,143
Synthetics.	10	29	71	124	167	209	200	222	232	254	264	270	234	798	1,020
Crude ...	20	14	9	13	19	29	28	33	36	29	25	33	56	109	123
STOCKS	Actual														
TOTAL ..	362	286	228	191	180	206	223	244	272	273	268	254	All Data As of		
Synthetics.	7	17	32	44	64	103	125	145	173	183	193	189	End of Quarters		
Crude ...	355	269	196	147	116	103	98	99	99	90	75	65			



Note: Requirements do not include rebuilding of producers' and consumers' inventories.

Exhibit "F." Channel and Furnace Carbon Black Requirements and Supply, 1945-1946, Estimated by Quarters

If these production factors were not present, it would have been futile to program the tire and tube expansion. Exhibit "G" shows the supply and requirements for crude and synthetic rubbers in 1943 and 1944, together with estimates for 1945. Exhibit "D" shows the projected consumption of crude and synthetic rubbers in the 1945 production plan.

Component Materials

The most serious problems which the industry will face in its efforts to achieve 1945 and 1946 production goals are in the fields of manpower and component materials required for the production of rubber products.

Rayon and Cotton Tire Cord: It is obvious that the high-tenacity rayon tire cord programs previously authorized did not contemplate production schedules such as those now projected for 1945 and 1946. The potential of rayon tire cord for 1945 is presently estimated at approximately 245,000,000 pounds, and for 1946 at approximately 296,000,000 pounds. To increase these totals would involve the construction of entirely new plants which present estimates indicate would require a minimum of 12 months and a maximum of 18 months. The requirements of the Rubber Bureau for high-tenacity rayon tire cord are estimated at approximately 292,000,000 pounds for 1945 and 368,000,000 pounds for 1946. The Rubber Bureau has, however, tempered its true requirements by filing with the Textile Bureau minimum requirements. The difference between true and minimum requirements represents the substitution of cotton for rayon tire cord with the expenditure of approximately 500 tons of crude rubber per month and some sacrifice in the quality of the tires produced. A rule of thumb measure indicates that approximately one pound of crude rubber is required to offset a pound of rayon tire cord shortage. Exhibit "E" shows in graph form the requirements and supply of high-tenacity rayon tire cord.

Cotton Tire Cord: There is a close relation between the availability of rayon tire cord and the requirements for cotton tire cord. Exhibit "E" also shows requirements and supply of cotton tire cord. The anticipated shortage of rayon tire cord is translated into pounds of cotton tire cord in the approximate ratio of 1 to 1.3.

Carbon Black: Future requirements for carbon black are greatly in excess of anything envisioned heretofore due, first, to the use of synthetic *versus* crude rubber, and, second, to the greatly expanded size of the

tire industry. Carbon blacks are divided into two general types—channel and furnace—and whereas they can be used somewhat interchangeably, present technological knowledge shows a depreciation in quality in some specific applications, if blacks of the furnace type have to be used to substitute for those of channel type.

Exhibit "F" shows channel and furnace carbon black requirements and supply. Requirements do not include rebuilding of producers' and consumers' inventories for which provisions must be made. The Chemicals Bureau of the War Production Board is fully cognizant of this problem and we are assured that all steps are being taken to provide the rubber industry with an adequate supply of carbon black and, to the degree possible, the particular types which the industry needs to produce the quantity and quality of products required.

Bead Wire: This important component is in short supply. Requirements have been filed with the Steel Division of the War Production Board. It is believed that with minor expansions in the industry and a careful scheduling of production that shortages which would handicap or curtail production can be averted.

Miscellaneous: There are many other component materials required for the rubber industry. The Rubber Bureau has compiled requirements for approximately 2,000 miscellaneous chemicals and textiles. Each one of these plays an important part in the program. With the exception of two or three chemicals and certain types of textiles no real problems are anticipated. Requirements for textiles essential to the production of footwear, conveyer belt, and various types of hose do, however, present problems which can only be resolved by a determination of relative essentiality in the overall demand for textile products.

Manpower

During the first three quarters of 1944 manpower represented a serious, if not a most serious, problem in attaining full production from rubber industry facilities. In August, 1944, manpower requirements for heavy-duty tire production were placed on the National Urgency List, second only to certain secret projects. The Army and Navy worked in close cooperation with the Rubber Bureau and furloughed many men for assignment to produce these heavy-duty tires. An Army Team was formed to assist production. As a result of the cumulative efforts of the War Manpower Commission and other government agencies involved, a large percentage of the men required for heavy-duty tire production were placed in the industry.

During November of 1944 the drive to man fully the tire industry received new impetus. Heavy-duty tires became only part of the problem, and all truck tires were placed on the National Urgency List. As a result of a resurvey of the industry, it was ascertained that on the new basis approximately 7,000 additional employes were required to achieve a fully manned condition. Succeeding weeks have shown increasing success in the joint efforts to supply additional workers to the industry. A substantial part of that work has already been accomplished, and approximately 4,000 additional employes have been added to the industry after giving full consideration to separations. There still remains a need of an additional 3,000 employes. The Army has furloughed approximately 1,500 men, most of whom have already started work. These men are included in the net gain as shown above. Should any of the furloughed soldiers be recalled to active duty, it is obvious that new men would have to be found to take their place.

Meetings have been held with both labor and management to stress the urgency of the situation. All members of the tire industry have signed a pledge which amongst other things, assures continuous seven-day operations and a cooperative settlement through collective bargaining of such differences as would have a deleterious effect on production.

Machinery and Equipment

The new expansion programs obviously entail the production and distribution of many Banburys, mills, calenders, and other machinery and equipment required to produce the tires called for under current production schedules. Pool orders for certain parts of this equipment have been placed, and subcontracting will be used extensively in order that the objective of delivery for all parts of the program before July 1, 1945, may be realized. Whereas the program has been accorded an AA-1 rating, it will also receive such directives as future produtcion difficulties indicate are necessary. Both the construction of new buildings and the production of this new equipment will be expedited in every way.

Miscellaneous Rubber Products

Many thousands of individual items are included under this general heading. Some of them are in as short supply as tires and tubes. They do not, however, make the headlines despite the essential character of their contribution to war production.

Bogie Rollers and Tank Treads: There is an acute shortage of bogie rollers and tank treads at the present time. Provision has been made for expansion of facilities which will not only serve to meet requirements, but also pick up and eliminate accumulated deficits. The importance of these products cannot be overestimated. The demand is obviously an integral part of the tank program. Requirements of replacement bogies and treads have shown a large increase as a result of the increased scale of operations in the various theaters of war.

Mechanical Goods: With but few exceptions, 35,000 and more items falling under the heading of mechanical goods are in reasonable supply, although in many instances the margin is very slight. Certain items, notably various types of hose, conveyer belt, etc., are in such short supply that special measures have been adopted to insure minimum requirements for military purposes. Various types of hose, for instance, are scheduled by the Mechanical Goods Branch. The difference between adequate and inadequate supply is in most cases a manpower problem. The number of men required, however, is of such minor consequence in the nation's overall manpower shortage that these products have not been placed on the National Urgency List, but rather have been handled in the individual local areas. Shortages of textiles are particularly apparent in the production of conveyer belt and will become more so as manpower is acquired and production reaches the levels necessary to satisfy the minimum requirements of our domestic economy and the export needs of our Allies.

Footwear, Soles and Heels: These essential products have been in short supply for upwards of a year. Their production has been increased, but is still inadequate to meet basic demand. It has only been through the elimination of all style items and miscellaneous types that the footwear requirements of the military and the rationing program have been met. Close cooperation has been maintained with the industry and government agencies to achieve this balance. The shortage of leather has had its repercussions in the demand for composition soles and heels to such an extent that an expansion program for the industry was sponsored in 1944, which, when completed, will involve the expenditure of approximately $10,000,000.

Drug Sundries and Specialties: With but few exceptions, the thousands of rubber items included under this heading are in reasonable supply. Those exceptions are, however, of great importance to the health and welfare of the military as well as the civilian population. Various expansions have been made in this field which with adequate manpower will help answer the immediate problem.

Coated and Proofed Materials: The problems in this field were substantially answered during 1944. They were of a dual nature—production on the one hand, and conversion from crude to synthetic rubbers on the other. Amongst the many products covered by this heading are flotation equipment, life-saving jackets, balloons, waterproofed materials, etc.

Camelback and Repair Materials: During 1944 the shortage of camelback for retreading of passenger and truck tires was eliminated. There are now adequate supplies to meet the conservation program and to insure each truck and automobile operator of a satisfactory material to obtain the last mile from his present tires. With the exception of extremely difficult problems in scheduling and supplying airbags for the military, requirements for the repair materials necessary for both domestic use and export have been covered.

Scrap and Reclaim Rubber: Supplies of crude rubber scrap are steadily diminishing. The extensive scrapyards of Rubber Reserve Co. will shortly have completed their distribution of the more desirable types of scrap rubber. There is, however, a substantial inventory position in the hands of the reclaiming industry which should insure full-scale operation for at least another year. Supplementing supplies on hand will be the crude rubber carcasses which will be turned into the scrap market as new tires become available and old ones pass from the picture. The reclaiming industry has made substantial forward strides in the reclaiming of synthetic rubber scrap, and this will undoubtedly prove the insurance policy for continued reclaim operations.

The demand for reclaim rubber has increased substantially as a result of the shortage of carbon blacks. Whereas approximately 16,000 tons per month have been adequate to meet recent demand, the industry must now increase its production to approximately 25,000 tons per month or only 1,000 tons less than the maximum ever attained by the reclaiming industry. To achieve these production goals additional manpower must be made available. The War Manpower Commission has designated the reclaiming industry as a critical activity which will prove of material assistance in obtaining the additional employes necessary for the new production schedules.

Organization

The Rubber Bureau was established on September 1 as the successor to the Office of Rubber Director. It assumed the duties of the Office of Rubber Director with the exception of responsibility for the operation and maintenance of the synthetic rubber plants and the research and development for the synthetic rubber program.

During 1944 the number of employes

(Continued on Page 200)

The Rubber Manufacturers Association

Its Purposes, Its Program, and Its Personnel

IN A sense it is a misnomer to speak of the rubber manufacturing industry. If a manufacturer takes steel and builds out of it an automobile, we speak of the automotive industry; if a manufacturer takes steel and builds out of a tractor, we speak of the farm equipment industry.

On the other hand if a manufacturer takes rubber and builds out of it, for example, a tire, or a hot water bottle, or rubber hose, or rubber footwear, or a piece of coated fabric, we speak of the rubber industry. Actually, we have a tire industry, a drug sundries industry, an industrial rubber goods industry, a rubber footwear industry, and a coated fabric industry.

The Rubber Manufacturers Association, Inc., recognizing that fact, has constituted itself, therefore, as the parent organization of a number of trade associations which function as divisions of the R.M.A., each operating under its own chairman, its own executive committee and its own budget.

Product Divisions

At the present time the R.M.A. is composed of the following product divisions:

1. Tire Division
2. Mechanical Goods Division
3. Footwear Division
4. Heel and Sole Division
5. Hard Rubber Division
6. Sundries Division
7. Coated Materials Division
8. Flooring Division

Either the chairman or the secretary of each of the divisions listed above, is a full-time officer of the R.M.A. Thus George Flint is chairman of the Tire Division, the Heel and Sole Division, and the Flooring Division. J. J. Catterall is executive secretary of the Mechanical Division; the chairman is J. H. Hayden, of Hewitt Rubber Corp., Buffalo, N. Y. C. P. McFadden is chairman of the Footwear Division; while R. J. Page is chairman of the Sundries Division. J. P. Hach is secretary of the Coated Materials Division, and the chairman is Howard M. Sawyer, of the H. M. Sawyer & Son Co., Cambridge, Mass.

Article II of the Constitution and By-Laws of the R.M.A., under the heading "Object," states that, "The Rubber Manufacturers Association, Incorporated, is established to promote in all lawful ways the commercial interests of its members and to secure the advantages to be obtained by mutual cooperation; to acquire and disseminate information concerning trade conditions at home and abroad, credits and other matters of interest, to stimulate social intercourse among those connected with the rubber industry and commerce and in general for the promotion of the welfare of the rubber industry."

The above-stated object is also the goal of each commodity division, although in these critical times the desirable goal of stimulating "social intercourse among those connected with the rubber industry" has to give way very largely to the pressing problems of a world dependent greatly on rubber products for the successful prosecution of the war and the early development of vast postwar programs.

OFFICERS AND DIRECTORS — 1945

PRESIDENT

A. L. Viles, 444 Madison Ave., New York, N. Y.

EXECUTIVE VICE PRESIDENT

Warren S. Lockwood, 444 Madison Ave., New York

SECRETARY

R. H. Goebel, 444 Madison Ave., New York

ASSISTANT SECRETARIES

George Flint	**J. P. Hach**
C. W. Halligan	**C. P. McFadden**
J. J. Catterall	**R. R. Ormsby**
F. K. Brasted	**J. J. Wolfe**
R. J. Page	

TREASURER

W. H. Dunn, Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J.

ASSISTANT TREASURERS

C. W. Halligan, 444 Madison Ave., New York

S. S. Green, United States Rubber Co., 1230 Sixth Ave., New York, N. Y.

GENERAL COUNSEL

John V. Groner, Fish, Richardson & Neave, 20 Exchange Place, New York

BOARD OF DIRECTORS

(*Terms Expire* 1945)

E. S. Boyer, chairman of board, American Hard Rubber Co., 11 Mercer St., New York

***John L. Collyer,** president, The B. F. Goodrich Co., Akron, O.

T. W. Miller, chairman of board, Faultless Rubber Co., Ashland, O.

Herbert E. Smith, president, United States Rubber Co.

E. J. Thomas, president, Goodyear Tire & Rubber Co., Akron

(*Terms Expire* 1946)

Geo. B. Dryden, president, Dryden Rubber Co., Chicago, Ill.

E. B. Germain, president, Dunlop Tire & Rubber Corp., Buffalo, N. Y.

J. J. Newman, vice president, B. F. Goodrich Co.

William O'Neil, president, General Tire & Rubber Co., Akron

P. W. Litchfield, chairman of board, Goodyear Tire & Rubber Co.

(*Terms Expire* 1947)

F. B. Davis, Jr., chairman of board, United States Rubber Co.

C. D. Garretson, president, Electric Hose & Rubber Co., Wilmington, Del.

J. P. Seiberling, president, Seiberling, Rubber Co., Akron

Harry E. Smith, vice president, Manhattan Rubber Mfg. Division

J. Newton Smith, president, Boston Woven Hose & Rubber Co., Cambridge, Mass.

* On leave of absence.

In addition to conferences and meetings, held on a divisional, regional, or industry-wide basis, for discussion of the problems of the industry, among the more important functions of the Association and its separate divisions is that of serving as a liaison between government and industry. The day-to-day contact with government agencies on production and other mutual problems, the analysis of governmental activities on behalf of the industry, and the sponsoring of meetings between representatives of the government and the industry frequently result in saving time, promoting understanding, or getting the job done more efficiently. A. L. Viles serves as consultant to the Rubber Reserve Co. and is also a member of the Rubber Industry Advisory Panel of the State Department.

Special Committees

In addition to the basic function of providing industry forums and government liaison, the Association serves all divisions through a series of special committees. For instance, the R.M.A. has an Accounting Committee, a Manufacturing Committee, a Public Relations Committee, a Crude Rubber Committee, and a Traffic Committee. C. W. Halligan is secretary of the Accounting Committee; its current chairman is W. H. Dunn, of the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. Mr. Viles is chairman of the Manufacturing Committee, and R. R. Ormsby is secretary. Warren S. Lockwood is chairman of the Public Relations Committee with F. K. Brasted secretary. R. H. Goebel is chairman of both the Crude Rubber and the Traffic Committees.

The Accounting Committee has long served an extremely important function in developing standard accounting practices for the industry. Mr. Halligan, in addition to being secretary of this committee, is also in charge of the statistical activities of the Association with a special staff maintained to compile production, consumption, and other industry-wide statistics for all divisions.

The Manufacturing Committee is active in compiling and distributing to the industry information regarding employer-employe relations and practices. Mr. Ormsby is serving part time on the Appeals Committee of the National War Labor Board.

The newly formed Public Relations Committee renders service to members, non-members, and the public, through the issuance of regular general bulletins, special bulletins, industry-wide or divisional booklets, news releases, etc. An informational library has been organized recently, with Dorothy Parker as librarian. This library is equipped to answer a wide variety of inquiries from members of the industry and from the public.

The Crude Rubber Committee played a major role for many years in assisting the industry in formulating crude rubber procurement policies, such as, developing standard crude rubber grades. When supplies from the Far East are again available, this activity will become of prime importance.

The Traffic Committee has for many years assisted the industry in questions related to freight rates, shipping, warehousing, and other problems which affect the flow of goods.

Among other general functions of the Association is liaison with the National Highway Users Conference, the National

(*Continued on page* 242)

EDITORIALS

No Time to Abandon the No-Strike Pledge

IT IS indeed a sad commentary that during a period when our war effort in Europe appears about to be crowned with success and our progress in the Pacific is becoming increasingly rapid, the rank and file of labor in the rubber industry has during this period turned in one of the worst records in the history of the industry, of almost continuous strikes and walkouts in violation of the pledges of its elected leaders. It is particularly disheartening since labor has been called in on most Washington production conferences, and its representatives visited Europe as guests of the War Department during February in order to see for themselves how dependent the success of our arms is upon the maintenance of an uninterrupted flow of military rubber goods to the battlefronts. It is also a peculiar paradox that at the same time, representatives of the CIO, AFL, and the U. S. Chamber of Commerce had just signed a charter of mutual confidence, and the URW president, Sherman Dalrymple, in a public address in Akron on April 5 emphasized that "cooperation of labor and management is necessary for the security and prosperity of the entire nation."

During the latter part of March and throughout April, mostly in Akron, but also in other rubber goods manufacturing centers, strikes, walkouts, and work-stoppages occurred almost daily. Some incidents were of short and some of considerable duration, but the extensive loss of the manufactured products to our Armed Services far outweighs any other factor at this time. It will be some weeks before this loss can be evaluated in terms of a reduced number of military tires, half-tracs, tank bogie wheels, fuel cells, and other war products, but it is impossible to deny that an effect on the war effort will result.

What caused this deterioration of morale of the workers of the industry, coming as it did immediately after they had just established such an outstanding production record in January and February of this year? An examination of some of the happenings of the past few months may afford at least a partial explanation, although a complete explanation of these actions, dependent as it is on many seemingly unrelated factors, probably can never be reached.

It seems quite possible that the War Department's non-stop 120-day production drive was sold so thoroughly to the workers that, when in March they found the drive could not be continued because incomplete planning had not provided sufficient component materials and since at that time the progress of war in Europe was so publicized that the workers began to expect the war there to be over momentarily, a tendency for relaxation of production effort developed, and grievances that had previously seemed minor became magnified. When the early V-E Day did not materialize, the grievances, however small, nevertheless provided an excuse for a holiday, and a holiday was taken, no-strike pledge and the still-continuing need of peak production notwithstanding.

Admittedly much damage has been done; yet the production schedules must be filled, and even when we have definite evidence that one war at least has been concluded, management and labor should again renew their pledge of mutual cooperation and adherence to the no-lockout-no-strike pledge and try to regain the enviable production rate of the first two months of 1945. As a final comment, the industry should not permit Washington to plan any further non-stop production drives unless it is made absolutely certain that there will be no possibility of a let-down from the supply and scheduling end.

Here Comes Tomorrow

WE ARE indebted to A. W. Zelomek, the author of a book reviewed elsewhere in this issue, for the title of this editorial since it seems to be the most appropriate one for expressing a few thoughts on the period that lies immediately ahead. That we should be concerned with the problems of reconversion, while at the same time trying to maintain peak production of war goods, is now an accepted fact. Tomorrow may be here sooner than we expect, and the rubber industry has a big stake in this world of tomorrow, in that there is a tremendous pent-up demand for its products, and the industry has many new war-expanded facilities available for use during the postwar period. The present outlook for a reduction in military programs during the next 60 or 90 days appears quite promising, but the demand on the materials, manpower, and plant facilities released will probably be greater than the capacity made available.

P. W. Litchfield, in his latest "Notes on the American Rubber Industry" on the subject of "Surpluses—Rubber's Approaching Problem," points out that international agreements are certainly going to be in order during the first phase of the postwar rubber problem. We wish to record our support to further observations by Mr. Litchfield that the rubber problem is heavily vested with conflicting international interests and needs to be approached in a spirit of good will and sympathetic understanding by all parties concerned. He brings out a particularly significant point when he states that there should be a wholesome willingness to strive for improvement of the quality and value of both *natural* and *synthetic* to the end that the products and services of rubber may be available to more people and that the consuming public be given consistently higher standards of living.

Although we are in a strong bargaining position because of our control of the synthetic industry, our hope for permanent world peace will certainly depend upon the economic health of all non-aggressive nations.

Scientific and Technical Activities

Program on Synthetic Resins

THE spring meeting of The Boston Rubber Group was held on April 6 at the Hotel Vendome, Boston, Mass., with 340 members and guests present. Chairman Harry A. Atwater, of Hood Rubber Co., presided, and a particularly interesting and timely program on the use of synthetic resins was presented. David S. Plumb, of Monsanto Chemical Co., spoke on "The Future of Synthetic Resins to the Rubber Processor," and Donald Powers, of Monsanto's Merrimac division, discussed "The Application of Resin-Formers to Fibers and Fabrics."

Mr. Plumb began his talk by emphasizing that even with the use of new synthetic rubbers, the tremendous growth and expansion of the rubber industry had been based on the manufacture of a variety of products from one or at most only a relatively small number of raw materials. The industry as a whole has only just begun to consider its adaptability to an entirely new and different series of raw materials being made available by the plastics industry, he said. All of these products offer a challenge to the rubber industry in two ways: first, they will open up new markets in fields never entered by rubber and, second, they will compete for the consumer's dollar with the older, established products.

A different conception of the rubber industry from one based on a given raw material is the conception which considers the industry as a group of individual unit operations, it was stated. Four unit operations which can be chosen as excellent examples to demonstrate the availability of new raw materials are calendering, coating and impregnating of textiles, laminating, and extrusion. With the exception of wire coating, calendering has probably received the greatest attention from the plastics industry, and plastics in turn have been used more in the coating of textiles than in any other rubber unit operations. During 1944 more than 100,000 tons of compounded vinyl resins were used. In addition to the vinyl, vinylidene copolymers and polyethylene, it is certainty that a number of new resins will be forthcoming in the near future from the various plastic materials suppliers' laboratories, Mr. Plumb declared. He pointed out that the markets which will be served by these new resins are of entirely different character than the markets formerly entered by rubber, and as examples were given the new fields of highly styled and decorative proofed textiles and free film products in hundreds of applications. Mention was made of the advantages of water dispersions of vinyl chloride and vinyl butyral, with special reference to the deposition of high coating weights in a single pass through a spreader. Transfer coating, a novel method which involves the formation of a continuous film on a strippable support after which the film is removed and laminated to the fabric, was also described.

It was also pointed out that a series of unit operations of the rubber processor is used in the manufacture of plastic laminates and that the newest fields and the ones of most interest to rubber processors are those of low pressure and no-pressure laminating. Using recently developed "impression" or no-pressure laminating resins and glass fabric as the filler, unidirectional lay-ups have given tensile strengths as high as 100,000 pounds per square inch; while cross-laminated samples go as high as 45,000 pounds tensile and 60,000 pounds flexural strength.

In addition to the extensive use of vinyl chloride and its copolymers in the wire coating field, the use of the more rigid plastics was described, and special attention directed toward the use of polystyrene, dichlorstyrenes, and the series of copolymers given the trade name of Cerex.

In conclusion this speaker stated that although the new plastic materials are an opportunity for the rubber industry, they are also indirectly a threat. In the last three years more than 100 firms have been established which have fabricated either plastic film, coated fabrics, or heavy-gage elastomeric sheeting. The plastic manufacturer is contributing a great deal to end-product development and to merchandising, but there is a limit beyond which he cannot go. In the field of rubber unit operations, it is up to the vision of the rubber chemist and the rubber sales executive to carry on their developments into the ultimate markets which should be the natural province of the rubber industry, Mr. Plumb said.

Dr. Powers described the application of resin-formers to fibers and fabrics which makes possible in effect the development of entirely new fibers and fabrics. The resins most satisfactory for this so-called "vulcanization of fabrics" are the resins which are themselves extremely hard and brittle. Their monomers, however, are soluble in swelling agents (water) for the fibers and thus make it possible to penetrate the heart or core of the fibers and yarns, it was said. After thoroughly swelling the fiber or fabric and penetrating the resin monomer into the yarn, the swelling agent is removed, and the resin polymerized. Concentrations of resins as high as 40% may be penetrated into the fiber and its softness and resilience still be maintained. Two to 4% of the same resin deposited on the surface of the fiber results in stiffness and brittleness.

Just as vulcanization converts rubber from a plastic to an elastic material with greater stability over a wider temperature range, so impregnation with resin-formers gives a textile fabric "memory" (elasticity), slip resistance, shrinkage resistance, and crush resistance, Dr. Powers stated and demonstrated these advantages with an exhibit of treated *versus* untreated cloths.

The Boston Rubber Group plans to hold a summer outing some time in June or July, and more definite information will be provided when the details have been worked out. So far this year a total of 425 memberships have been received.

Reclaiming Synthetic Discussed at N. Y. Group Meeting

THE spring meeting of the New York Rubber Group, held April 13 at the Building Trades Club, New York, N. Y., heard three papers on the reclaiming of synthetic rubber, a program originally arranged by the Chicago Rubber Group for a meeting scheduled for February 2, but which had been cancelled by the ODT. Through courtesy of the Chicago Group, it was possible to present these papers before the New York Group. About 325 members and guests attended the meeting, which was presided over by Vice Chairman George J. Wyrough in the absence of Chairman H. E. Outcault.

The titles and authors of the three papers which made up this symposium on reclaimed rubber were: "Technical Problems in Connetcion with Reclaiming Synthetic Rubber" by Fred S. Conover, chief chemist, Naugatuck Chemical Division, United States Rubber Co.; "Compounding Problems with Synthetic Rubber Reclaims," E. B. Busenburg, chief chemist, Philadelphia Rubber Works; and "Economic Factors Involved in the Transition from Natural Rubber to Synthetic Rubber from the Reclaimers' Standpoint," John S. Plumb, vice president, U. S. Rubber Reclaiming Co.

Mr. Conover first reviewed the history of the reclaiming of rubber, starting with the patent taken out by Charles Goodyear in 1853 for the manufacture of crumb rubber, the patent of Mitchell in 1881, the patent of Marks in 1899, and then mentioned some of the most recent patents granted for the reclaiming of synthetic rubber. About 16% of reclaim production today is made by the process of Hall and Bushnagel, 3% by the acid process of Mitchell, and about 80% is made by the alkali digestion process of Marks, it was reported. The reclaiming of all currently important types of synthetic rubbers has been accomplished using equipment now in common use, but the major problem at present is that of segregation and sorting of scrap materials. Methods of identification of the different synthetic rubbers have been worked out, but detailed analysis of each piece of scrap rubber which has not previously been segregated by use of a prescribed mold marking or the manufacturer's knowledge of its composition is an impossible task, Mr. Conover said. He urged rubber manufacturers to make every effort to classify and segregate the various rubbers in the scrap from the production lines of their own plants.

Mr. Busenberg stated that the new synthetic rubber reclaims have some different and interesting properties as compared with natural rubber reclaims, and in his opinion, as more is learned about them, they will find many applications and offer definite advantages for some purposes. He mentioned that in addition to GR-S tire and tube reclaims, useful materials can be produced from Butyl, neoprene, and acrylonitrile types of scrap. He presented several slides to show the results of some recent laboratory tests on GR-S whole tire reclaim compared with natural rubber whole tire reclaim, behavior of synthetic reclaim in the vulcanizing process, natural and GR-S reclaim in a channel black loaded stock, and the effect of partial replacement of neoprene GN (GR-M) with neoprene reclaim.

Mr. Plumb discussed his subject from three main considerations: (1) the economic considerations involved in the collection, distribution, and grading of scrap rubber; (2) the factors involved in the actual processing and production of the reclaimed material; and (3) the market possibilities and limitations for the finished product. He declared that the reclaiming industry probably has about two years' supply of natural rubber scrap before synthetic rubber scrap will begin to appear

in increasingly large amounts, and that the industry must plan, therefore, on either a gradual transition, starting within the next twelve months, or an abrupt switch to all synthetic reclaims at the end of two years. He emphasized that positive separation of synthetic scraps of the various types both from each other and from natural rubber was of paramount importance; that although no great expense will be entailed in plant and equipment modification, additional expense is to be expected in the reagents used in reclaiming synthetic rubber; and that although the market for synthetic reclaims is small at the present time, the increased use of synthetic reclaims should result from the development of outstanding properties at comparable prices.

Following dinner, two motion pictures, "Highballing to Victory," the Army sound film on the role played by tires in the war, and "Communique No. 16," which showed actual battle scenes on the various fronts, were presented.

Los Angeles Group Meetings

THE Los Angeles Rubber Group Inc., has held three meetings, one on February 6, one March 6, and one April 6, and the fourth meeting of the present year is scheduled for May 1.

The feature of the February meeting was a Father and Son night held in honor of the thirty-fifth anniversary of the Boy Scouts of America, and members were requested to bring their sons to this meeting, or if they had no son, or if he was away, they were asked to bring a service man as guest. Attendance at this meeting totaled 158, including 48 guests. Arthur Schuck, chief scout executive of the Los Angeles Council, spoke on the anniversary of the Boy Scouts of America; W. L. Butler, naval aeronautical and aerodynamics engineer of North American Aircraft Co., and vice president of the National Model Airplane Association, exhibited his collection of model airplanes; and Thurston Knudson explained his theory of the origins of rhythm and demonstrated the differences in technique characteristic of the natives of Africa and the West Indies. At the technical group, which preceded the regular meeting, E. Cunningham, of Stanco Distributors, Inc., talked on "The Present Status of Butyl Rubber." A War Bond donated by the Group was won by R. E. Hutchinson of the Firestone Tire & Rubber Co., who then presented the bond to the Boy Scouts of America. Other prizes donated by H. Muehlstein & Co. and Plastics & Rubber Products Co. were won by John Huff, Herbert Berg, Robert Nagle, Robert Vonder Reith, Lim Yee, R. F. Parkerton Sr., and Mason Paine.

The March 6 meeting was featured by a showing of the animated color film "The Amazon Awakens," which portrayed life along the Amazon River and its tributaries. A major portion of the film was devoted to the Ford Plantation on the Tapajoz River. There were several shots in the picture showing how the natives collected raw rubber years ago, and also the new methods being taught them at present. Another feature of this meeting was a discussion by "Juan X. Perez," an alleged Brazilian industrialist, on the potential possibilities of his native land. "Senor Perez" was eventually revealed as Chester Gruber, noted humorist and news commentator. Prizes donated by the C. P. Hall Co., the Braun Corp., and E. I. du Pont de Nemours & Co., Inc., were won by James Arnold, Art Wolff, Bob Short, Walter King, Alan Moore, F. H. Banbury, Charles Roese, Monty Montgomery, Bob Abbott, Charles Fetzner, George Green, Paul Wineman and Glenn Goes. Approximately 155 members and guests were present at this meeting. At the technical session which preceded the regular meeting S. M. Cadwell of United States Rubber Co., spoke on "Synthetic Tires."

At the April 6 meeting entertainment was provided by Clarence or "Ducky" Nash, the voice of Donald Duck, Dick Mitchell, artist illustrator of the Walt Disney Studios, and Lloyd Prante, author and humorist, who gave a talk on "The Tragedy of the Vanishing American"; namely "Chic Sale." Mr. Mitchell gave a very interesting talk, with drawings, on how Disney animates his pictures and then "Ducky" Nash produced Donald, who entertained the audience with his comments and singing. Among the guests present at the meeting were W. D. Pardos, vice president of the Thermoid Co., Trenton, N. J.; F. H. Banbury, of Farrel-Birmingham Co., Inc., Ansonia Conn.; Frank Steele superintendent of the Goodyear Tire & Rubber Co. of California; and Walter Head, manager of The B. F. Goodrich Co., of Los Angeles. Prizes donated by Olds Alloys Co., Miller Gasket Co., Union Oil Co., Thiokol Corp., and Martin Hoyt & Milne Co. were won by George Abballi, J. A. McClinton, L. Ketler, Ed Lewis, Andy Matelik, Craig McCormick and Lim Sing Yee. At the meeting of the technical group, Mr. Banbury discussed "Some Latest Ideas Concerning the Operation of Banbury Mixers." Mr. Banbury described the use and maintenance of the Banbury mixer and told of improvements being made.

Chicago Group Meeting

A DINNER-MEETING of the Chicago Rubber Group was held on March 23 at the Morrison Hotel in Chicago with 300 members and guests in attendance. Two very interesting papers were given at this meeting, one on "Mold Manufacturing Methods" by S. O. Black and I. W. Robinson, both of the Dryden Rubber Co., and one on "Polyester-Type Resins in the Rubber Industry" by Frederick J. Myers, of Resinous Products & Chemicals Co.

Mr. Black, who gave the first paper, described very thoroughly the manufacture of cavity molds and emphasized particularly the advantages to be gained by close cooperation between the mold design engineer and the rubber product design engineer. He pointed out that many curved surfaces and complex shapes in rubber products made the design of molds for these products unnecessarily difficult and costly while in a large number of cases a product designed along simpler lines would provide just as good results in service.

Mr. Myers in his paper presented a brief picture of the chemical constitution and utility of polyester-type resins as a general class. The linear-type polyester resins were considered in greater detail, and the use of Paraplex G-25 as a plasticizer for polyvinyl chloride and butadiene-acrylonitrile types of synthetic rubbers was discussed. The elastomeric-type linear polyesters, characterized by Paraplex X-100, a peroxide-curing type, and Paraplex S-200, a sulphur-curing type, were also considered from the standpoint of rubber technology. In general it was stated that these "rubbers" are characterized by high resilience, good low-temperature flexibility without extractable plasticizers, and oil resistance approaching that of the butadiene-acrylonitrile type of synthetics. Specifically Paraplex X-100 is characterized by speed of cure and freedom from sulphur; while Paraplex S-200 is outstanding in its dry heat resistance, Mr. Myers said. A postulated mechanism for peroxide-curing was discussed in considerable detail.

It was reported by the reclaim-scrap contest committee that several entries have already been received.

War Production Conference

THE Chicago Technical Societies Council, in cooperation with the Army, the Navy, and the War Production Board, held a War Production Conference at the Hotel Stevens, Chicago, Ill., March 29. Thirty-six panel sessions, including one on synthetic rubber, sponsored by the Chicago Rubber Group, and one on chemistry, sponsored by the American Chemical Society, were of particular interest.

B. W. Hubbard, of Ideal Roller & Mfg. Co., presided over the session on synthetic rubber. L. H. Cohan, director of research, Continental Carbon Co., presented a paper on "Carbon Black in Synhtetic Rubbers"; Leon J. D. Healy, consulting chemist, spoke on "Synthetic Rubber Mechanical Goods"; and R. C. Dale, chief chemist, Inland Rubber Corp., discussed "Synthetic Rubber in Tire Manufacture" at this session.

Martin H. Heeren, chairman of chemical and chemical engineering research, Armour Research Foundation, was in charge of the session on chemistry at which H. A. Winkelmann, technical director, Dryden Rubber Co., presented a paper on the "Chemistry of Synthetic Rubbers."

In his talk Dr. Cohan briefly reviewed the principal production methods and fundamental properties of carbon black. The electron microscope and other new techniques indicate that carbon blacks are composed of smooth non-porous, spherical particles. Although these particles do not break down in rubber, they themselves are composed of much finer crystallites. The behavior of carbon black in principal synthetic rubbers—GR-S, GR-M, and GR-I—and natural rubber were also reviewed. The general trends of the most important physical properties of vulcanizates of these rubbers with average particle diameter of the carbon blacks are very similar for all of these rubbers.

The current outlook for completely adequate carbon black supplies is not favorable despite the utmost efforts of the carbon black manufacturers to increase production, Dr. Cohan said. Recent increase in requirements of about 30% is chiefly responsible for the seriousness of the shortage. Carbon black production is being increased as rapidly as possible by the construction of new Defense Plant Corp. plants. The Witco-Continental group will have a total production on August 1, 1945, equal to about 300% of the January 1, 1944, production, he stated.

Most carbon black manufacturers can produce MPC black with about 10% higher yield than EPC black, and some relief in the present shortage can be obtained by switching requirements from EPC to MPC. Results were presented showing that a blend of 90% MPC and 10% SRF blacks is equivalent or even slightly superior to EPC black in GR-S and natural rubber, according to laboratory tests. Comparison of various inorganic pigments, such as Witcarb "R" (fine particle size calcium car-

bonate) and hard clay, with carbon black indicates that for some purposes these inorganic pigments can be used to replace carbon blacks, Dr. Cohan said in conclusion.

Mr. Dale in his talk on "Synthetic Rubber in Tire Manufacture" said that the need of tires today for both military and civilian use is still so great that the present tire production capacity of the nation is insufficient to meet the needs. The lack of skilled labor, tire producing equipment, and raw material supply is a triune factor which accounts for this deficiency in production. The provisions for increasing production by means of new tire plants and new facilities for the production of carbon black and tire cord were mentioned.

The ratio of synthetic rubber to crude in military and civilian truck tires has been increased over that of last year so that today tires for light truck and passenger use contain only a fraction of 1% of natural rubber, Mr. Dale pointed out. Larger-size tires still contain an appreciable amount of natural rubber, but the crude content of these tires is approximately 50% less than that used last year while at the same time a 50% greater performance is noted. This increased performance is largely due to the advances made in compounding and polymer research carried out by government and private technical groups. The testing program being conducted today by both groups is helping to increase the quality of our synthetic rubber tires by decreasing processing time, heat build-up, crack growth, and skidding tendencies and by increasing the wearing performance, mileage life, and load limit, Mr. Dale said. He emphasized that extra care was necessary in using GR-S tires and that they could be recapped and that sectional repairs would take care of all minor breaks. If the rate of development of synthetic rubber over the last two years is maintained, the product resulting in a few years will be superior to the natural rubber produced in the days before the present war, this speaker concluded.

Trenton Society Formed

FORMATION of the Trenton Technical Society, an organization open to those engaged in various scientific fields in the Trenton, N. J., area, took place on April 3 at an initial gathering where 52 representatives from 18 companies located in the vicinity of Trenton elected executive officers and designated chairmen and members of several committees to put into operation the various planned activities of the group. To meet adequately the broad interests of the society's membership, it was pointed out that these activities will include both organic and inorganic chemistry. Among the various fields represented at this stage are rubber, plastics, ceramics, paper, metallurgy, and biochemistry.

Gerald P. Roeser, Thiokol Corp., was elected president; N. R. Yorke, Panelyte Co., vice president; and Newell Perry, of Thermoid Co., secretary-treasurer. An executive committee, headed by Mr. Roeser, includes W. Wake, of Whitehead Bros. Rubber Co.; X. V. La Porta, of Joseph Stokes Rubber Co.; Clyde Hoover, of Essex Rubber Co.; and A. I. Applebaum, of International Products. Chairman of the committee to draft the Society's constitution is Don M. Welch, Thermoid, assisted by J. L. Van Order, Columbian Carbon Co.; H. L. Becker, Homasote Co.; J. J. DeMunnick, Puritan Rubber Co.; and C. W. Virgin, Vulcanized Rubber Co. The program committee consists of Mr. Yorke, chairman, and T. J. Fadgen, Eastern Aircraft Co.; W. A. Perry, Rohm & Haas; J. W. Kemmler, Sloane-Blabon Corp.; and W. C. Powers, New Jersey State Board of Pharmacy.

The second meeting of this new organization will be held at Kelly's Restaurant in Trenton on May 1. Following dinner, Irving W. Ruderman, of the Panelyte division of the St. Regis Paper Co., will speak on "The Isolation of Poly-Nuclear Substances from the Phenol-Formaldehyde Reaction."

Specification for GR-S-AC

GR-S-AC is a copolymer of butadiene and styrene manufactured in the same manner as standard GR-S, except that in the coagulation process, alum is employed in place of salt and acid. Like Standard GR-S, GR-S-AC contains approximately 1.5% of a standard rubber antioxidant. Likewise, of the hydrocarbon present in GR-S-AC approximately 23% by weight is derived from styrene.

Specification Limits[1]

I. General

All GR-S-AC shall be free of foreign or extraneous material, which is objectionable in normal rubber practice.

II. Chemical

	%
	maximum
A. Volatile matter	0.75
B. E-T-A extract	10.00
	minimum
C. Fatty acid (as stearic acid)	3.00
	maximum
	6.00
D. Soap (soluble as sodium stearate)	0.01
E. Ash	1.00

III. Physical

A. Viscosity of GR-S-AC
45 minimum
ML 212° F. @ 4 minutes 55 maximum

B. Viscosity of Compounded Stock
ML 212° F. @ 4 minutes 65 maximum

C. Test on Vulcanizate at 82° F.

Cure @ 292° F.—Minutes	25	50	90
Tensile strength—minutes p.s.i.			2700
Elongation—minimum %			500
Modulus @ 300% elongation—minimum p.s.i.	300	700	1000
Modulus @ 300% elongation—maximum p.s.i.	500	950	1350

GR-S-AC for wire and cable use shall also conform to the requirements in the current Specification for GR-S, Supplement on GR-S for Wire and Cable Use.[2]

Sampling and Method of Analysis

The procedure for Sampling and Method of Analysis for GR-S-AC shall be the same as that in the current Specification for GR-S.[3]

This Specification is issued by Rubber Reserve Co., Washington 25, D. C., upon request and with the approval of the Committee on Specifications for Synthetic Rubbers, which is giving further study to the specification and test methods used.
Approved—December 5, 1944
Released—December 20, 1944
Effective—January 1, 1945.

[1] All specification limits include the tolerances of the test method. Any lot represented by a sample which fails in one or more tests to meet the specification limits may be retested. For this purpose two additional samples shall be taken according to the same procedure as the original sample. Failure of either in any respect shall be cause for rejection.

[2] INDIA RUBBER WORLD, Jan., 1945, p. 446.

[3] The latest specification for GR-S, effective January 1, 1945, as compared with that printed in INDIA RUBBER WORLD, July, 1944, pp. 418-20 has under Sec. II B 2 b on Mixing Procedure under (10) "Allow the stock to rest for at least one hour and for not more than *8 hours.*" Under (11) it is stated "Take viscosity sample *and test it immediately.*" Editor.

A.S.T.M. Developments

AT ITS meeting on April 10 the executive committee of the American Society for Testing Materials cancelled the five-day regular annual meeting of the Society scheduled for Buffalo on June 18-22. Instead there will be a business session or sessions the last week of June in New York. The exhibit of testing apparatus and related equipment has also been cancelled. The technical papers and reports that normally would have been presented will be printed and distributed to the members. Technical committees are holding meetings at various times and places.

The present work of the Society will be extended in preparation for standard tests and specifications for ultimate consumer goods; the responsibility for planning and directing the development of this program will be placed in the hands of a new administrative committee. Members of a committee, headed by A.S.T.M. Vice President Arthur W. Carpenter, of The B. F. Goodrich Co., who have studied this subject of ultimate consumer goods are: A. G. Bancroft, Alexander Smith and Sons Carpet Co.; R. D. Bonney, Congoleum Nairn, Inc.; T. A. Boyd, General Motors Corp.; A. L. Brassell, United States Testing Co.; Jules Labarthe, Jr., Mellon Institute of Industrial Research; G. C. MacDonald, Montgomery Ward & Co.; and H. H. Morgan, Robert W. Hunt Co. A report of this committee appraises the extent and significance of the consumer movement, activities of various field agencies, and the need of consumer goods standards in connection with labeling, grading, and certification plans. Herbert J. Ball, professor of textile engineering, Lowell Textile Institute, past president of the Society and chairman of Committee D-13 on Textile Materials, will head the administrative committee on ultimate consumer goods.

Detroit Group Plans

THE next meeting of the Detroit Rubber & Plastics Group, Inc., will be held May 11 at the Detroit-Leland Hotel, Detroit, Mich. Following dinner, a symposium on "Three Modern Rubber Laboratories — A Discussion of Their Most Interesting Equipment" will be the feature of the evening. J. W. Schade, of the Government Evaluation Laboratory, J. N. Street, of Firestone Tire & Rubber Co., and a Goodyear representative, all of Akron, will discuss their latest test equipment either installed or planned in the laboratories of their organizations. Later meetings of the Group will be held on September 13, October 30, and December 14, 1945.

Executive committee appointments for 1945 are: John Dudley, Chrysler Engineering Laboratories, chairman; R. J. Shroyer, R. T. Vanderbilt Co., vice chairman; E. J. Kvet, Baldwin Rubber Co., secretary; Fred

Wehmer, Minnesota Mining & Mfg. Co., counselor; J. W. Temple, United States Rubber Co., programs; C. W. Selheimer, Wayne University, publicity; Ed Briske, U. S. Rubber, membership; Earl Sutter, Acushnet Processes Co., and Richard Fublow, Essex Wire Corp., technical papers; Mr. Wehmer, educational; John Freese, Chrysler Engineering Laboratories, materials and standards; and J. P. Wilson, Ford Motor Co., W. J. McCourtney, Chrysler Engineering Laboratories, and W. J. Phillips, General Motors Research, advisory.

R. I. Club Meeting

THE meeting of the Rhode Island Rubber Club, held March 30 at the Crown Hotel, Providence, R. I., was featured by a talk by J. Burleigh Cheney, president of the Skyway Corp., Providence, on "Taxi Service by Air," and a technicolor sound film which described the development of helicopters and showed the present experimental production of Bell Aircraft Corp. was also included as part of presentation. About 70 members and guests were in attendance at the meeting.

Mr. Cheney stated that by the Fall of 1945 his company hoped to provide regular service between trains and regular airline planes in Providence and to include later many of the New England cities having regular airline service. Helicopters will not be ready for use by the average citizen as a personal plane for some time to come, according to this speaker, but will be put to practical use taxiing business men who need to make frequent visits to local branches and as connecting links between regular train and plane services, and are just about ready for operation in the Providence area. Passenger cost is expected to be about 10¢ a mile.

Vibron Resins

A NEW family of liquid resins, which permit the production of castings and laminated structures by simple methods and at contact or low pressure, marketed under the name of Vibron resins, has been announced. Although they are being produced at present for war purposes only, potential uses of these resins include applications in aircraft, automobile, and other transport industries, in building trades for both functional and decorative purposes, and in packaging.

Vibron-103 resin, one member of the series, when mixed and catalyzed ready for use, is a clear, nearly colorless (pale yellow) liquid with a specific gravity of 1.15-1.16 and a viscosity of 2 to 5 poises. The basic formula for curing Vibron-103 resin contains 0.5-2.0 parts by weight of a catalyst (benzoyl peroxide) on 100 parts of the resin, and a suggested cure is one hour at 70° C., followed by one hour at 120° C. Under these conditions a very strong, only slightly flexible, clear, transparent, infusible, insoluble solid is obtained without the evolution of gaseous or volatile products. These new materials, when combined with spun glass or other fabrics, have a strength equivalent to that of steel, it is reported.

Some of the properties of the cured 103 resin are: specific gravity, 1.28; volume shrinkage on curing, 9.4%; at room temperature, unnotched Izod impact strength, 10.3 p.s.i.; flexural strength, 17,000 p.s.i.; Young's modulus, 240,000 p.s.i.; and Rockwell hardness, M-80. The refractive index is 1.533, and the elongation at break 5% to 10%. The electrical properties given include a volume resistivity of 6×10^{15} ohm-cms. and a dielectric strength (0.005-inch sample) of 2,000 v/mil. Chemical resistance after A.S.T.M. one-week immersion at room temperature shows a 1.05% absorption with distilled water, less than 1% with sulphuric and nitric acids in concentrations of 3 and 30 on the former and 10 on the latter, 2.11% with 10 and 0.87% absorption with 1% sodium hydroxide, negligible absorption with carbon tetrachloride and gasoline, and 9.5% with acetone. Naugatuck Chemical Division, United States Rubber Co., New York, N. Y.

CALENDAR

May 1.	**Trenton Technical Society. Kelly's Restaurant, Trenton, N. J.**
May 1.	**Los Angeles Rubber Group, Inc. Mayfair Hotel, Los Angeles, Calif.**
May 11.	**Detroit Rubber & Plastics Group, Inc. Detroit-Leland Hotel, Detroit, Mich.**
May 11.	**Akron Rubber Group. Mayflower Hotel, Akron, O.**
May 14-June 30.	**Seventh War Loan Drive.**
May 18.	**Chicago Rubber Group. Morrison Hotel, Chicago, Ill.**
May 20-26.	**National Cotton Week.**
June 4-6.	**Chemical Institute of Canada. 1945 Conference. Chateau Frontenac Hotel, Quebec, P. Q., Canada.**
June 5.	**Los Angeles Rubber Group, Inc. Mayfair Hotel, Los Angeles, Calif.**

Quebec Chemical Conference

THE first conference of the Chemical Institute of Canada will be held on June 4-6 at the Chateau Frontenac Hotel, Quebec, P. Q. There will be a celebration of the twenty-fifth anniversary of the opening of the chemical department of Laval University; other highlights will be: technical sessions on pure chemistry, biological chemistry, agricultural chemistry and nutrition, chemical education, chemical engineering, rubber and plastics, textile chemistry and protective coatings, and a symposium on "Coordination of Chemical Research and the National Welfare."

WPB Report

(*Continued from page 194*)

showed a steady decrease. In December there was a total of 146 employes of whom 20 were dollar-a-year men. This compares with a total of 505 employes at the peak of the Office of Rubber Director operations and 237 on September 1, 1944.

The expansion and related programs have created a vastly increased volume of work. It has therefore been necessary during the past month to add to various understaffed parts of the organization, and probably further additions will have to be made in order that the work may be expeditiously and efficiently accomplished. Some of the additional personnel have been drawn from other parts of the War Production Board, and some have been drawn from industry. To achieve our objectives, there has been a complete reorganization of the functions and responsibilities within the Bureau. This reorganization should prove of material assistance to the Rubber Bureau in achieving a relatively small, but compact and hard-hitting organization.

The Rubber Bureau has followed the precepts of the Office of Rubber Director in simplifying procedures to the greatest extent possible with minimum strain upon the industry and others concerned. When materials have come into reasonable supply, they have been taken from allocation, leaving their use subject only to the regulatory provisions of the Rubber Order. As a result of this policy, neoprene and Buna-N have recently been taken from allocation. GR-S, of course, was taken off allocation many months ago. It is improbable that Butyl can be taken from allocation for some time, and it is obvious that the allocation of crude rubber will continue until after the war, with restrictions being continuously increased to keep pace with technological progress in the field of potential further conversions.

Conclusion

The problems of 1944 were many in number and varied in character. The splendid cooperation between industry, labor, and government has provided the means to overcome most obstacles and to obtain satisfactory solutions for many difficult problems. It is with confidence that the Rubber Bureau faces the tasks scheduled for 1945. To industry, to other government agencies, and to our associates in the War Production Board, the Rubber Bureau extends its appreciation. The objectives have been defined. They must be met and without delay.

J. F. CLARK
Director, Rubber Bureau

February 1, 1945.

Rubber Reserve Circular 38

THE Rubber Reserve Co. Circular No. 38, issued February 16, concerns itself with the selling price for African rubbers. Rubber Reserve has received about 7,000 long tons of African rubber from stocks which have accumulated in the United Kingdom and the Union of South Africa. The "Civilian Use" price will be 10½¢ a pound from the dock or from the warehouse at the option of Rubber Reserve Co. The usual freight charge will also be added.

If this rubber is used in the manufacture of end products in connection with "War Orders," manufacturers should report the consumption so that the additional payment of 17½¢ a pound can be collected by Rubber Reserve from the appropriate governmental procurement agency.

These statements apply only to African rubber shipped to Rubber Reserve Co. from stocks accumulated in the United Kingdom and the Union of South Africa.

Petroleum Administration for War, Washington, D. C., on April 6, because of continued scarce supplies of butane and propane-butane mixture, extended indefinitely a restriction against the use of these fuels for drilling oil and gas wells in areas where natural gas is available as a substitute. Butane is essential both in the production of 100-octane gasoline and synthetic rubber.

LU

STATEX

Tires

It is the survival of the fittest

400 TONS OF SMOKE A DAY

• A COLUMBIAN COLLOID •

LUMBIAN CARBON CO. • BINNEY & SMITH CO.

MANUFACTURER DISTRIBUTOR

GR-S TRUCK TIRE TREADS

reinforced with Statex-93 or blends with Micronex wear smoothly and evenly.

Body breaks, ply and tread separation are rare, particularly in tires covered with a tread of straight Statex-93. Tread Cracks, if not entirely absent, are small and not numerous.

"Worn to the breaker after good mileage" is the report which can confidently be expected on Statex-93 tires.

STATEX-93 *truck tires survive longer*

MICRONEX

For 30 years—The Standard Reinforcing Carbon

FURNEX

The High Resilience Carbon

•

COLUMBIAN CARBON CO.
MANUFACTURER

BINNEY & SMITH CO.
DISTRIBUTOR

UNITED STATES

Tire Component Shortages and Civilian Tires Major Problems; Labor Difficulties Numerous

As John L. Collyer began his work in Washington directed toward balancing the production of component materials with that of synthetic rubber and tires, one of his first acts was to bring to the WPB, J. L. Cochrun, vice president of the Seiberling Rubber Co., to direct and survey home-front needs of rubber products and to see that the war effort within the country is provided with essential tires and rubber products. The addition of six more leading rubber industry executives to the Rubber Bureau was also announced on April 20. Mr. Collyer, on April 9, emphasized to the Rayon Producers' Segment of the Synthetic Yarn and Tire Cord Industry Advisory Committee, called to Washington to discuss 1945 and 1946 tire programs and high-tenacity rayon requirements, that acute shortages of rayon yarn have reached the point of severely retarding the production of military tires and tires needed for war-supporting civilian activities. The resignation of James F. Clark, director of the Rubber Bureau, became effective on March 31, 1945, and W. James Sears, deputy director, is temporary head until a new director is appointed. On April 22, Mr. Sears released revised tire production schedules for the second quarter of 1945 in which figures were revised upward, as compared with the schedule presented on March 17 by WPB Chairman J. A. Krug. Numerous strikes plagued the industry during April, and on April 21 practically all operations at The B. F. Goodrich Co.'s Akron plant were halted by a general strike. More than 16,000 workers were idle until April 24, when operations were resumed. P. W. Litchfield, chairman of the board of the Goodyear Tire & Rubber Co., called surpluses "Rubber's Approaching Problem" in the third publication of his "Notes on America's Rubber Industry."

Component Material Shortages

The shortages of component materials for rubber goods production, highlighted during March by carbon black, are being extensively surveyed by Mr. Collyer's office in the WPB, and the shortage of tire cord appears destined to replace the shortage of carbon black in importance with several other materials likely to cause almost equal concern.

Not all of the information contained in the WPB statement of March 29 on the work of the Inter-Agency Carbon Black Committee headed by Michael J. Deutch of the WPB could be included in our April issue, and the additional information not previously reported is presented herewith. Most of the steps taken by this committee to increase carbon black production were reported early in March by Charles C. Miller of *The Akron Beacon Journal*. However the amount of propane to be made available by the PAW at the end of the present heating season was given as 150,000 gallons a day by the WPB statement instead of the 50,000 gallons as given by Mr. Miller. Other items in the WPB statement included an indication that 5,000,000 pounds of carbon black per month may be diverted from export to the rubber industry of this country; a report that the committee had requested the War Department to take steps to obtain production of carbon black from existing facilities in France, that the possibilities of producing carbon black in the Middle East are being investigated; that the production of carbon black in California, the mid-continent areas, and in Canada, where sweet gas may be used, is being pushed; and that in Louisiana other steps are being taken to permit the use of sweet gas.

A detailed list of the 23 carbon black expansion projects as approved on March 16 together with certain supplementary comments and explanations, as provided by the WPB, is given below.

Before the domestic rubber manufacturing industries can regain January operating levels and meet manufacturing specifications and export requirements, carbon black production must be increased 19%, WPB said. To realize peak schedules now programmed, including truck tire expansions coming into complete production early next year and export requirements for other United Nations, 64% more carbon black must be produced monthly.

Acute shortages of high-tenacity rayon yarn for tire cord has reached the point of severely retarding the 1945 tire program, and, consequently, the production of military tires and tires needed for war-supporting civilian activities, Mr. Collyer told the Rayon Producers' Segment of the WPB Synthetic Yarn and Tire Cord Industry Advisory Committee, in Washington on April 9.

Shortages of labor, especially of lead burners in the construction of new facilities, due to separations, Selective Service withdrawals, and a high percentage of absenteeism at several plant locations, rather than scarcity of materials, are the bottleneck retarding capacity production necessary to meet yarn requirements, committee members advised government officials. Despite every effort of the industry to recruit additional workers, in close cooperation with local offices of the USES, of the WMC, there is still a deficit of workers needed to man present capacity of the four principal producers, committee members said. Besides those presently needed, additional workers will be required to man new facilities expected to be brought into operation within the next six to eight months.

Unless new workers can be recruited and arrangements made for service deferments of many present workers, production losses of 10,000,000 to 15,000,000 pounds, or 20 to 28% of the current quarterly capacity of 54,000,000 pounds, will be incurred in the second quarter of 1945, the committee stated, and added that the situation will become increasingly worse if the manpower problem is not solved promptly. To meet an estimated minimum requirement of 70,200,000 pounds in the fourth quarter, 1945, a 40% increase over the present production rate is necessary. Further-

CARBON BLACK EXPANSION PROJECTS

(Projects Approved and Granted AA-1 Preference Rating March 16, 1945.)

Company	Location	Estimated Costs	Estimated Production Capacity*	Type Project	Estimated Completion Date
					1945
Godfrey L. Cabot, Inc.	Guymon, Okla.	$262,000	Pipeline	New Facility	June
Godfrey L. Cabot, Inc.	Borger, Tex.	801,666	36.0	New Facility	Oct.
Godfrey L. Cabot, Inc.	McCoy, La.	1,040,000	5.5	New Facility	Aug.
Godfrey L. Cabot, Inc.	Wickett, Tex.	150,000	Sup. Fac.†	Add'l Equip.	May
Cities Service Oil Co.	Ector Co., Tex.	224,000	Sup. Fac.†	Add'l Equip.	June
Cities Service Oil Co.	North Cowden, Tex.	150,000	Sup. Fac.†	Add'l Equip.	Apr.
Columbian Carbon Co.	Seagraves, Tex.	55,595		Desulphur	May
J. M. Huber, Inc.	Borger, Tex.	212,400	9.0	New Facility	July
Jefferson Lake Sulphur Co.	Clemens, Tex.	360,454	14.4	New Addition	Aug.
Charles Eneu Johnson	Eunice, N. M.	2,825,000	30.0	New Facility	Nov.
Charles Eneu Johnson	Monument, N. M.	410,000	4.6	Addition	Sept.
Phillips Petroleum Co.	Borger, Tex.	260,500	16.0	Addition	Sept.
Phillips Petroleum Co.	Borger, Tex.	119,310	Sup. Fac.†	Add'l Equip.	Apr.
Phillips Petroleum Co.	Goldsmith, Tex.	53,000	Sup. Fac.†	Add'l Equip.	June
Phillips Petroleum Co.	Eunice, N. M.	142,826	Sup. Fac.†	Add'l Equip.	May
Roxboro Steel Co.	Hardin, Tex.	350,000	9.6	New Addition	July
United Carbon Co.	Ryus, Kan.	1,105,748	24.0	New Facility	July
United Carbon Co.	Ryus, Kan.	1,248,420	24.0	New Addition	Dec.
United Carbon Co.	Ector Co., Tex.	158,621	Pipeline	Addition	June
United Carbon Co.	Foster Field, Tex.	139,000		Desulphur	Sept.
United Carbon Co.	Midland, Tex.	28,755		Desulphur	Apr.
United Carbon Co.	Odessa, Tex.	1,135,200	15.0	Addition	Aug.
United Carbon Judkins Co.	Ector Co., Tex.	139,475		Desulphur	Oct.
		$11,371,970	188.1		

* Millions of pounds per year.
† Sup. Fac.—Supplementary Facilities.

Note: Desulphurization is a process required with certain types of facilities.

THE ABOVE FACILITIES REPRESENT 40% OF THE EXPANSIONS REGARDED AS NECESSARY TO PRODUCE CARBON BLACK FOR MAXIMUM OPERATION OF THE RUBBER MANUFACTURING INDUSTRY INCLUDING ALL EXPANSIONS.

more, to meet ultimate 1946 requirements, when the tire expansion program has been fully completed, a 55% increase over the present production rate will be necessary. Adequate housing, as an inducement to holding present labor and recruiting additional workers, is also a necessity in many areas, the committee pointed out.

Attention was called to the fact that WPB will grant top priorities assistance to the four expansion projects already approved and the one remaining to be approved in order to facilitate with all possible speed the completion of these facilities to provide for both 1945 and 1946 yarn requirements.

The urgency of the manpower situation was referred to the consideration of Joseph D. Keenan, WPB vice chairman for labor production, and Lt. Col. D. B. Hardin, representing the Army, who attended the meeting. Both indicated that the matter would have their immediate attention.

Monthly production schedules of each producer were also discussed, and the representative of each company was asked to indicate the extent to which his company's schedule would be met.

The Rubber Bureau began to take a more hopeful attitude on the component material shortage problem, when on April 22, Mr. Sears released revised schedules for tire production for the second quarter, in which the tire units programmed were revised upward as compared with the schedule of March 17 as given by Mr. Krug. Mr. Sears explained that it had been possible to schedule this increased number of tires because it was expected that additional amounts of critical components, particularly carbon black, would be available to the rubber manufacturing industry. Should the present scheduled supplies of carbon black, rayon and cotton tire cord, rosins, chafer fabric, and bead wire not materialize, the new tire production schedules will not be met, but, on the other hand, if more of these components are available, the Rubber Bureau will promptly revise schedules so that the maximum numbers of products badly needed for the war effort will be produced, it was stated.

This revised production schedule is based on the continuation of the use of lesser amounts of carbon black in each item than the amount that should be present to make the most efficient product. The reduction in the amounts of carbon black permitted in all items is an emergency measure undertaken to stretch the short supply of carbon black as far as possible, the Rubber Bureau said. Though some products will not give the most efficient usage, the Rubber Bureau, after consultation with industry, has endeavored so to adjust the amounts of carbon black that no item is inferior to the extent that it will not give adequate service.

If these increased production schedules are met, additional manpower will be required, according to WPB estimates, not only in the rubber manufacturing industry, but in the rayon and cotton yarn and fabric mills as well as in carbon black plants. More manpower is also needed the Rubber Bureau said, to increase the overall production of other components such as rosins, in order that the relatively small percentage needed by the rubber manufacturing industry may be supplied in full.

Up to this time the Rubber Bureau has received no reduced requirements for tires and tubes from the Armed Forces. The Bureau is doing everything possible to maintain a flow of supplies from mine, field, and forest to factory and from factory to our Armed Forces in the distant parts of the world. For reasons of military security, it is not possible to reveal in advance allocations of tires and tubes to the Armed Forces and to essential civilian users. Because military needs have not been filed in several categories, these increased schedules will mean but small increases for civilian needs in many items, according to the Rubber Bureau. However it may be said that all increased production does not go to fill military needs first. A certain percentage of any increase is allocated for essential civilian use.

Care and conservation of existing tires, tubes, and other rubber products is highly important if this nation is to carry on the war effort unhampered, WPB emphasized. Continued increases in production are planned, but the overall demands for tires, tubes, and other rubber products cannot be filled for many months to come, the Rubber Bureau said.

Because of the necessity of keeping existing tires on the road, the production of camelback for recapping is now scheduled at 90,000,000 pounds for the second quarter, 10% above the rate of production in January. A limitation order, L-345, on April 26 placed all camelback except that required for direct military use under allocation. An amendment to this order, however, prescribed that the maximum amount be permitted for essential civilian uses.

The following table gives the revised production scheduled for the second quarter of 1945 compared with what might have been produced in the second quarter if the January, 1945, production rate had been maintained, and also with the curtailed schedule for the second quarter that was developed in March as a result of the shortage of carbon black.

Type of Tire	Second Quarter Production Based on January, 1945 Production Rate Units	Second Quarter Production as Scheduled March 17 Units	Revised Second Quarter Production Schedule April 22 Units
Airplane	338,142	330,439	337,955
Truck & Bus: A-1	32,490	48,730	51,167
A-2	13,017	13,333	14,000
A-3-a	95,181	136,288	136,288
A-3-b	977,049	1,086,011	1,086,011
A-4	765,696	767,454	905,487
A-5	2,095,992	2,061,788	2,425,633
A-6	1,337,175	972,000	1,156,721
Total	5,316,600	5,085,604	5,775,307
Passenger & Motorcycle	5,982,663	3,165,000	5,200,000
Tractor-Implement			
Over 7.50	244,446	150,227	150,227
Under 7.50	420,318	230,000	300,000
Total	664,764	380,227	450,227
	Pounds	Pounds	Pounds
Camelback	81,645,312	72,000,000	90,000,000

Clark Resignation Accepted

Mr. Krug on March 31 announced that the resignation of James F. Clark, director of the Rubber Bureau, became effective on that date. Mr. Krug stated that when Mr. Clark accepted the position as director of the Rubber Bureau in September, 1944, it was agreed that he would serve for only three months. Because of the aggressive conduct of the war, which required many changes in production schedules for the rubber industry, Mr. Clark was asked to continue as director. However, on February 7, Mr. Clark submitted his resignation so that he could return to private business after almost three years of effort devoted to war production.

In a separate announcement, Mr. Collyer stated that until a new director was appointed, all communications for the director of the Rubber Bureau should be addressed to W. James Sears, deputy director.

New WPB Appointments

It was announced on April 12 by the WPB that Colonel Cochrun had agreed to assist Mr. Collyer, Special Director of Rubber Programs, for a limited period. Colonel Cochrun's duties will be to see that the war effort within the country is provided with essential tires and rubber products. He is eminently fitted for this assignment, having been associated with the rubber industry since the end of the last war. His work has dealt largely with the distribution of tires and other rubber products. In his military career, Colonel Cochrun has seen service in China and Japan, and during World War I commanded the 330th Infantry Regiment of the 83rd Division, American Expeditionary Force. He was also assistant chief of staff (G-1) of the Second Army.

It was also announced on April 20 that more top technical men had been loaned by the rubber industry to assist the work of the WPB Rubber Bureau.

Ralph F. Wolf, chief chemist of Polson Rubber Co. since 1943, is working with the Tire and Tube Division on the scheduling of tube production. During 1941 and 1942 he was with the OPM and the WPB and prior to that time was director of synthetic rubber compounding research for the Standard Oil Development Corp. From 1932 to 1940 he was connected with The B. F. Goodrich Co. in various technical capacities.

Frank Kovacs, former director of development for Seiberling, will assist the technical operations staff in matters of rubber compounding and tire design. Mr. Kovacs in 1930 was associated with the Thiokol Corp. and from 1934 to 1938 he specialized in developing cotton cord for tires. He returned to the Seiberling company in 1938.

C. Robert Case, of Goodyear, will also work with the technical operations staff in the development of conversions to synthetic rubbers, conservation of natural rubber and carbon black, and the most efficient usage of high-tenacity rayon cord in tires. Since 1933, Mr. Case has worked on tire design and since 1942 has been resident engineer in Washington for Goodyear, working on the development of military products.

Gilbert K. Trimble, vice president of Midwest Rubber Reclaiming Co., who has been a consultant to the assistant director for technical operations on reclaim and scrap rubber, will now give full time to increasing production of reclaim rubber. Mr. Trimble was formerly in charge of the Scrap and Reclaim Rubber Division of the ORD. Before that he had been advisor to the Baruch Committee on reclaim rubber problems. He first entered the rubber business 22 years ago and has been connected with Midwest Rubber Reclaiming since 1928.

Roy Faylor, also of Goodyear, will act as a consultant to the program and statistics division of the Rubber Bureau and will specialize on statistical studies. Mr. Faylor started in the rubber business in 1922 with the General Tire & Rubber Co. and has been with Goodyear since 1924.

In addition to the above men, it was announced that Frank P. Downey, Jr., of American Machine & Foundry Co., has become a member of the staff of the Special Director of Rubber Programs. He will work on overall administrative and personnel problems. Mr. Downey had been with the ORD from its formation until September, 1943, and has been associated with various other government agencies for the previous five years in administrative work.

Labor Difficulties Numerous

In spite of the urgent need of peak production, labor difficulties have been increasingly frequent during the past several weeks. More than 4,000 workers at the United States Rubber Co. plant at Detroit were on strike for two or three days in mid-March in protest against the discharge of a URW committeeman. Production of military tires was resumed on a limited scale on March 19 after URW president, Sherman H. Dalrymple, threatened disciplinary action.

A strike also occurred at the Akron plant of the Goodyear company on March 20 when calender crews refused to accept an idle-time rate of about 82¢ an hour, while the calender they had been using was being repaired, and demanded that they be paid their regular rate of $1.70 an hour. An entire day's production of 4,950 military tires was lost.

An on-again, off-again strike originating with Banbury machine operators at Goodyear in Akron continued for several days early in April and resulted in a complete shutdown at Plant 1 by April 8, because of lack of processed stock. Operations were gradually resumed during the week of April 9. One estimate of this shutdown stated that a production of 35,000 military and essential civilian tires had been lost.

Three hundred foremen at the Goodrich plant in Akron went on strike on April 5 in protest over the discharge of a veteran foreman and an "accumulation of grievances." They voted to return to work at a meeting on April 6 after Paul Fuller, United States Labor Department conciliator, told them that they could return to work without fear of dismissal by the company. The men are members of the Foremen's Association of America, an independent labor organization. The company stated that production during this difficulty was reduced 20%.

Tire building operations at the Firestone Tire & Rubber Co.'s Plant 1 in Akron were also threatened with suspension on April 13 owing to a strike of Negro mill room workers. About 525 men were involved.

General Tire experienced an almost complete stoppage of tire production because of a dispute over wages by bias cutters, on April 14. Tire builders followed the bias cutters in the walkout. According to a statement from Akron, the only production on that date was being produced by furloughed soldiers and a few others.

On April 19 a wage dispute involving nine tube room workers at the Goodrich plant in Akron initiated a series of events which resulted in the complete shutdown of this plant by April 21. On April 20 a group of workers in the physical testing laboratory walked out because an employe had been suspended for three days for carelessness which resulted in damage to a laboratory mill. More than 15,000 workers were idle until April 24.

In a paid advertisement in *The Akron Beacon Journal* on April 23, the Goodrich company addressed "The Men and Women of The B. F. Goodrich Co." as follows;

"Since Thursday, April 19, 15,000 men and women of the B. F. Goodrich Company of Akron have lost more than a half million dollars in earnings.

"During the same period about 2,500,000 pounds of scheduled war and essential civilian production—more than 50 large carloads of finished rubber products—have not been manufactured.

"In fairness to all those affected the Company believes that the men and women on our Akron rolls should know the facts.

"The agreement between the Company and Local 5, U.R.W.A., C.I.O., provides a three-step procedure for negotiating differences. Under a War Labor Board directive order, if satisfactory settlement is not reached after the three-step procedure has been taken, such problems then go to arbitration.

"Arbitration (agreement to permit a disinterested outside party to review the facts and render a decision) is held necessary so that every problem may be finally and definitely settled without interruption of production under Labor's 'no strike' and Industry's 'no lockout' pledges."

The account then reviewed the events in the tube mill room and the physical testing laboratory which lead up to the complete shutdown and added:

"The agreement between Local 5 and the Company provides 'Any grievance or problem before becoming a matter of dispute must be reduced to writing, numbered and approved by the proper Union official and thereafter negotiated with Management' . . . the three-step procedure. No problem has so far been presented to the Company on this matter."

Continuing, the efforts of Mr. Fuller were reported, and it was stated that although on April 20 an agreement was reached between the union and the company regarding settlement of the tube room wage dispute, the strike continued. On April 21 it was further stated that the union's negotiating committee met with the company and requested that the company agree to a moratorium on rules of discipline pertaining to attendance. This was a new request and had not been previously considered or discussed, and since no agreement could be reached, Mr. Fuller again met with the union committee and secured the company's agreement on a suggested program for dealing with this problem, it was reported.

In this connection the following is of special interest:

"The Company believes that it has a responsibility to maintain reasonable standards of attendance and conduct within the plant for the welfare of the B. F. Goodrich men and women and for the maintenance of continuing operations. It is the Company's desire to fulfill that responsibility without discrimination or prejudice."

Emphasizing again that proper provision had been made for settling all disputes, the statement concluded:

"It is in your interest to determine the reason for striking before you take part in a 'sympathetic strike.'

"It is unnecessary for any employe to strike in order to secure a fair and equitable solution for any problem that he may have with the B. F. Goodrich Company."

Decision of the Goodrich employes to return to work was reached at 2:30 a.m. on April 24, following a meeting of the executive board of the Goodrich Local No. 5, URW, and other union committeemen. The regional WLB in Cleveland on April 23 had ordered resumption of production, terming the stoppage a violation of labor's no-strike pledge. A WLB hearing to determine the cause of the strike and try to settle the grievances of the union and the company appeared to be the next step.

A work-stoppage in the mill room at Goodyear's Plant 2 occurred April 23 and was settled the same day, but operations at this company's rim plant were suspended because of a strike involving 375 workers.

Litchfield's "Notes"

In two additions to his series on "Notes on America's Rubber Industry," Mr. Litchfield discussed "Rubber—Its New and Increased Uses" and "Surpluses—Rubber's Approaching Problem."

In the first publication he emphasized that new uses for known forms of rubber, both natural and synthetic, and the development and employment of still newer forms are adding daily to the multitude of tasks this versatile product of tree and test tube is being called upon to perform. Replacement of steel automobile springs by rubber spring-suspensions is a coming innovation that will do its share toward widening the future field of rubber's utility, he said. Other uses, such as tires for agricultural and construction equipment and the use of rubber in conveyer belts of dramatic size and performance, were also stressed.

In the publication on surpluses Mr. Litchfield discussed the postwar situation during the first year or two after the liberation of the rubber growing areas and also the situation when supply and demand approach a more normal balance. During the first period he foresaw no considerable surplus of either natural or synthetic rubber and expressed the hope that America would be allotted a fair share of the available natural rubber during the first two years. With regard to the second period, the need of sufficient synthetic rubber production to provide national security and maximum service to the American consumer of rubber goods was emphasized, and the considerations of price stability, the impairment of the economy of the rubber growing areas of the Far East, protection of the principles of free competitive enterprise in world trade, and encouragement of the nations of South America now interested in developing sources of natural rubber as part of their own expanding economy, were mentioned. Two paragraphs should be noted particularly:

"In the interest of the greatest value for the ultimate consumer of tires and other rubber products, the possibility of eliminating both the high-cost plantations and the high-cost synthetic plants, with an attendant reduction of the surplus of supply, naturally suggests itself.

"—the rubber problem is rapidly approaching and we should prepare. It is heavily vested with conflicting international interests. It needs to be approached in a spirit of good will and sympathetic understanding by all parties concerned. There should be a wholesome willingness to strive for improvement of the quality and value of both natural and synthetic to the end that the products and services of rubber may be made available to more people and that the consuming public be given consistently higher standards of living. In that basis, the broadest and most enduring interests will be served in the end."

WLB Industry Wage Decision

The National War Labor Board on April 13 made public its decision regarding disputes between 64 rubber companies and the United Rubber Workers of America, in which the Board directed payment of a bonus of 3¢ an hour for night work, but denied demands for a 17¢ general wage increase and modified demands for industry-wide paid lunch periods and for liberalized vacation plans.

The Board conducted a public hearing on the above issues only a month ago, dispensing with the usual panel in order to expedite a decision. Non-wage issues and those relating to the correction of intra-plant wage inequities have been referred to the regional WLB offices for disposition. Approximately 140,000 employes in 92 plants throughout the country are involved in the case. With respect to six plants, the Board withheld application of the order pending further consideration of jurisdictional questions raised by the firms.

In directing a bonus of 3¢ an hour for work between 6 p.m. and 6 a.m. (or other similar period to meet local conditions), the Board's order explained that this made the night-shift premium the equivalent of 4¢ on the second shift and 8¢ on the third shift when allowance is made for the fact that employes on all shifts are receiving a night-work allowance of 1.8¢ in their base rates as a result of previous WLB action. The union had demanded a night work differential of 10¢ an hour.

The Board found that it is the prevailing practice in the rubber industry to pay employes for time off for lunch where they are required to remain in the plant, and that it is not the practice to do so where the employes have a regularly scheduled lunch period during which time they leave the plant. Consequently, it denied the union's demand for a 20-minute lunch period for the latter group, but granted it for "those employes who are required to remain in the plant for production reasons or otherwise for the full scheduled work shift."

As to vacations, the Board directed one week with pay after one year and two weeks after five years.

The Board's order is retroactive to the date of the expiration of the last contract between the parties, or the date on which the contract was properly opened, whichever is earlier.

As to any company which asks for price relief or gives notice that appreciable increases will result in the cost of production of items not subject to price ceilings and sold to government procurement agencies, the Board's order can be placed in effect only upon determination by the OPA or the procurement agencies that price ceilings or production costs will not be affected, or if no such determination is made, upon approval by the Economic Stabilization Director.

Pending further consideration, the Board exempted six companies from the order, but retained jurisdiction of the cases. These were the Los Angeles retread plant of the Firestone company; U. S. Rubber Reclaiming Co., and General Cable Corp., both in Buffalo, N. Y.; Linear Packing & Rubber Co., Philadelphia, Pa.; W. J. Voit Rubber Co., Los Angeles, Calif.; and International Shoe Co., Hannibal, Mo.

War Food Administration, Washington, D. C., on March 31 under WFO 129 restricts the distribution, delivery, and use of stearic acid in the interests of national defense.

Revisions on Rubber Order

A saving of 3,000 long tons of natural rubber a year will result from Amendment 5 to R-1, issued April 3, according to the WPB Rubber Bureau. Amendment 5, revising List 24, specifies construction changes involving the use of more synthetic and less natural rubber for the following heavy-duty tires for military procurement: (1) low platform trailers; (2) 10.00 cross-section, mud-snow; (3) 14.00 2-ply highway, mud-snow; (4) 8.00 to 16.00 combat; (5) earth-movers, 8.25 to 18.00. After severe tests, the Army and Navy agreed to the changes in specifications set forth in the amendment. As a typical example of how far the use of synthetic in place of natural rubber has gone, the 10.00 cross-section, mud-snow tire will hereafter be made with 90% synthetic rubber as compared with 70% used in the last few months.

The Rubber Bureau on April 21 explained the purpose of Direction 12 to R-1. The direction amends List 35, Appendix II, under which carbon black was placed under restriction by type as well as by the total amount permitted in the manufacture of rubber or synthetic rubber products. Direction 12 removes the restriction on the types of carbon black that may be used in any item, but does not increase the total of all blacks allowed. By the removal of specific limitations on the use of types of carbon black, manufacturers of rubber or synthetic rubber products may utilize available amounts of carbon black as they see fit, as long as the total amount is not increased. The Rubber Bureau expects that in consequence manufacturers will be able to utilize to the best advantage the carbon black allocated to them each month.

The Rubber Bureau has taken steps, by amending (Amendment 1) Appendix III to R-1, to control, during the second quarter of 1945, the number of tubes which may be produced for civilian passenger-car and small truck tires. By this action the Bureau estimates that 1,000,000 pounds of carbon black a month will be made available for the production of heavy-duty truck and bus tires. For the past ten months GR-S has been produced in sufficient quantities to meet all demands. Passenger-car tubes and small truck tubes 6.00x16 and 6.50x16 are made with GR-S. Therefore there had been no control on the manufacture of these types. A reasonable inventory of these tubes has been built up so that there exists approximately 40% more tubes than tires in these classifications. The amendment to Appendix III is designed to bring tire and tube inventories into line. After April 6 and until July 1, 1945, no manufacturer of tubes for civilian passenger cars and civilian small trucks, sizes 6.00x16 and 6.50x16, may produce these tubes without specific authorization from WPB. Manufacture will be limited; so tube inventories will more nearly approximate tire inventories in these categories. Orders placed by direct military claimants, however, may be accepted, without limitation.

Appendix IV as Amended April 3, 1945, to R-1, places truck-bus, tractor-implement, and industrial tires under allocation and prescribes a procedure for the distribution of these products among designated government claimant agencies on a quarterly basis. The revised appendix supersedes Direction 1 to Appendix IV, issued February 10, which, consequently, has been revoked.

Conservation Order M-328, as Amended March 31, 1945—Provisions Applicable to Textile, Clothing and Related Products—among other changes, lists in Schedule B—Rejects Which May Be Delivered Only on Specific Authorization of the WPB—synthetic rubber thread and products made therefrom.

Supp. XIII to Schedule A, Conservation Order M-328B, in listing fabrics and components for children's snow suit program No. 2, includes ¼-inch elastic for belt of ski pants or leggings—but not more than eight inches per garment.

Supplementary Order M-317B, as Amended April 10, 1945—Cotton Sale Yarn Production and Distribution—revises the sections dealing with the amount of yarn each producer must supply and sales by wholesalers and retailers.

Because of the shortage of hydroquinone, used, among other things, in the manufacture of synthetic rubber, the commodity has been placed under government regulation, Schedule 101, M-300.

Limitation Order L-201, as Amended April 9, 1945—Automotive Tire Chains, Tractor Tire Chains, and Chain Parts—authorizes an increase in output of tire chains for farm tractors.

Limitation Order M-353 was revoked March 26, and white pigments (titanium dioxide and zinc sulphide) made subject to General Preference Order M-340.

Allocation Order M-352—Acetone and Diacetone—was revoked April 16 and its products placed under M-300. Also made subject to M-300, with restrictions to begin June 1, were fumaric acid, and maleic, fumaric, "Carbic," and pentaerythritol oils and resins.

F. O. Holbrook, managing director, Progress Rubber Co. Pty. Ltd., Auburn, N.S.W., Australia, visiting the United States with a mission sponsored by the Australian Government to study manufacturing methods, spent some time with the editors of INDIA RUBBER WORLD while in New York last month. Mr. Holbrook's comments on his difficulties in maintaining continuous production under wartime conditions of material and machinery shortages plus the well-meaning, but sometimes cumbersome efforts of the government war agencies had an all too familiar sound. His account of how he overcame a temporary shortage of holland cloth, in this case urgently needed so that retreaders could obtain camelback to continue their work and keep Australian cars and trucks rolling, was particularly interesting since it portrayed Mr. Holbrook's ability to improvise when necessary. According to Mr. Holbrook, a situation developed where essential transportation was being halted even though retreaders had the equipment and time to do the necessary recapping work, and his plant had the camelback ready for tubing, but no holland cloth to handle the stock between the rubber plant and the retreader's shop. Ordering the retreaders to call at his plant for delivery, but insisting that they bring with them flat boards eight to ten feet long and several inches wide, Mr. Holbrook delivered the camelback on to these boards, and although the transportation to the retreader's shop required more care than if the holland cloth had been available, the scheme worked, and recapping operations were resumed in Mr. Holbrook's locality.

Rubber Reserve Co., Washington, D. C., will erect a factory building at 19,-253 S. Vermont Ave., San Pedro, Calif., at a cost of $5,100.

Carbon Black Prices Changed; Tire and Footwear Orders Revised

New pricing provisions allowing producers higher ceilings for all rubber grades of channel carbon black made under emergency high-cost conditions and sold to DSC appear in Amendment 3 to Supplementary Regulation 14F to GMPR—Channel Carbon Black—effective March 31. This amendment provides increases above the minimum required by law for the purpose of encouraging the maintenance and expansion of production, OPA said. DSC will resell the channel carbon black to the rubber industry at a flat price, based upon the estimated weighted average acquisition cost.

WPB, which has prepared a production step-up program on carbon black, asked OPA to grant higher ceiling prices for the rubber grades of this commodity to compensate producers for the use of unusual expedients in increasing their output. These expedients include the use of enriching agents for the gases normally serving as raw materials.

The price increases, which will vary, depending upon the raw materials used, will be determined by each producer, using the formula set forth in the new pricing provisions. The resulting ceiling will be subject to OPA approval. In brief, the formula (for all except new plants) permits the addition of current raw material cost per pound to specified conversion costs in effect during the first half of 1944.

Higher costs in operating certain new and rehabilitated plants were provided for previously by OPA, when a formula was supplied producers by which higher ceilings could be determined for "Easy Processing" channel carbon black when specified high-cost production conditions existed. Amendment 3 expands the formula so as to include all rubber grades of channel carbon black and include a wider range of high-cost conditions. It also includes an automatic adjustment provision to take care of increased costs arising out of raw material contract revisions for existing production.

Amendment 3 was forecast on March 19, when authority was granted producers to sell rubber grades of channel carbon black to DSC on an adjustable pricing basis, pending the issuance of the new pricing provisions. The adjustable pricing authority was withdrawn simultaneous with the effective date of the new provisions.

Representative members of the channel carbon black industry were consulted by OPA in the preparation of the new pricing provisions.

Higher than normal costs for rubber grades of channel carbon black may be passed on by producers and their distributers when selling small quantities of this commodity that they have bought from the DSC pool, according to Amendment 4 to 14F, effective as of March 25, 1945, date when DSC, started to acquire the entire output of rubber grades of channel carbon black. This action will affect only a limited number of less-than-carlot sales, which producers or their distributers have customarily made to rubber manufacturers. Amendment 4 permits, on such small sales, an addition to the existing ceiling price of the difference between the price actually charged by DSC for carbon black in covered hopper cars (at present 5c a pound) and the normal price of 3.3c a pound. The increase cannot be made on sales of any inventory not purchased directly or indirectly from DSC at a higher than normal price. Also, the seller must use the first-in, first-out method of charging his inventory. Sellers must keep inventory records sufficient to verify the prices charged on all such small-lot sales.

An adjustable pricing order covering sales to the Defense Supplies Corp. of rubber grades of non-specialty furnace carbon black produced from propane appears in Order No. 50 under Section 1499.19a of the General Maximum Price Regulation. This order permits production of additional furnace carbon black by propane enrichment pending determination regarding the extension of the present formula, which covers high-cost channel black, OPA said. This formula provides higher than existing ceilings for increased production by high-cost producers. Any maximum price increases found necessary will apply to deliveries to DSC made after March 24, 1945, when the order became effective.

Additional quantities of furnace carbon black are needed as a step in relieving the rubber shortage. The Inter-Agency Committee on Carbon Black recently recommended that producers of rubber grades of furnace black increase their output by using propane to enrich their gas supply. OPA explained that it is possible that black produced by this method cannot be made and sold at present ceilings, and maximum prices for it may have to be increased.

Amendment 1 to Order 50, issued later in the month, adds the phrase "or other gas enriching agents" after the word "propane" and the phrase "or industrial users" after the words "Defense Supplies Corp."

Regulations Affecting the Tire Industry

Manufacturers are given a quick method of determining their ceilings on sales of new tires to brand owners in Amendment 5 to RMPR 143—Wholesale Prices for New Rubber Tires and Tubes—effective April 16. Under this method manufacturers will merely deduct 60% from the maximum retail price of each tube to obtain ceilings on sales to brand owners. The method is supplied as optional to three existing methods. Two employ a formula and require detailed reports to OPA, while the third method is the use of March, 1942, cost-plus contract prices. The new method will provide ceilings substantially the same as obtained from use of the other three methods. It will also eliminate the need of submitting detailed cost date by manufacturers who had no cost-plus contracts in effect in March, 1942, and heretofore had to use the other two methods. Establishment of the alternative method was strongly endorsed by members of the industry, OPA said.

Amendment 5 also makes it clear that the ceiling price provisions covering sales of new rubber tires and tubes by brand owners apply also to sales organizations owned or controlled by brand owners. These subsidiary organizations include retail stores, selling units, factory branches, etc. Such coverage has been understood by interpretation heretofore.

Wholesale ceiling prices for all synthetic rubber tires sold for civilian use, except farm tractor and farm implement tires, were reduced April 15 by Amendment 6 to RMPR 143. No retail ceilings were changed, but OPA expects to announce decreases in retail ceiling prices of synthetic rubber passenger-car tires within the next few weeks.

Manufacturers, brand owners, and wholesale distributers of tires are affected by Amendment 6. On May 1, 1944, OPA granted these sellers temporary price increases, because of higher manufacturing costs, amounting to 8.9% of the maximum retail price on synthetic rubber passenger-car tires, and 6.5% of the maximum retail price on all other synthetic rubber tires except farm tractor and farm implement tires. This second group represents truck tires chiefly. These temporary increases, scheduled to expire on April 15, 1945, are now reduced to 3% of the retail ceiling on passenger-car tires, and 5% of the retail ceiling for the second group of tires.

Based on production during the last half of 1944, these wholesale reductions will result in a reduced return to manufacturers of approximately $20,000,000 a year. The changes were made after consultation with OPA's industry advisory committee for tire and tube manufacturers and distributers.

Further revisions may be made later in the wholesale ceiling prices. The manufacture of synthetic rubber tires has not yet reached a point where the costs involved can be predicted with accuracy, and technological studies are still continuing in the industry, OPA said and also pointed out that due regard to possible cost increases, and the need of maximum production of tires, made it advisable to maintain a price level that will not be an impediment to the continued full productive capacity of the industry.

The April 15 reductions will maintain a price level for all tires at least as high as that of October 1-15, 1941, and will, notwithstanding any foreseeable increase in cost that may develop in the near future, preserve a price level for manufacturers sufficient to cover at least the manufacturing costs of the industry in general.

With regard to retail ceilings, OPA said it plans to reduce by 7.5% the retail ceilings of synthetic rubber tires made of rayon construction. These tires are being made for trucks and other vehicles, such as buses and farm equipment, and not for passenger cars. Heretofore there has been a premium of 12.5% on these tires over the ceilings for the same size and type of tires made of cotton construction. When the proposed 7.5% decrease is made, it will automatically cause corresponding decreases in wholesale ceiling prices. Practically all large-size truck tires made are of rayon construction.

Revised Order 35 to RMPR 143, effective April 5, establishes maximum retail prices for sales of Kelly Lug Trac rock service and logger tires made by Kelly-Springfield Tire Co., Cumberland, Md.

Amendment 8 to MPR 435—New Bicycle Tires and Tubes—effective April 23, adds 15 brands of balloon and lightweight bicycle tires, products of The Pharis Tire & Rubber Co., Newark, O., to the coverage of the order.

Order 33 to RMPR 528 sets retail ceilings for two sizes of tractor tires made by the Goodyear Tire & Rubber Co., Akron, Ohio. Order 34 covers the maximum retail price for the same company's new 9.00-16, 8-ply mud and snow tire.

Order 27 to RMPR 131—Camelback and Tire and Tube Repair Materials—sets maximum prices for sales to jobbers, retailers, and vulcanizers and also when sold at retail or cemented patch and uncemented reliner—repair materials made from scrap material.

Amendment 139, MPR 373, effective June 14, revokes Section 51, covering used tires and tubes in Hawaii.

A preferential list of occupations for use in selecting persons to receive passenger-car tires has been prepared by OPA in cooperation with the WMC. This list will be used in channeling the reduced quota of tires to persons whose transportation needs

are regarded as most essential to the war effort. Under the new plan the number of eligibles is not reduced, but is classified into four preference groups for the aid of local War Price and Rationing Boards in issuing tire certificates. Establishment of priority groups is necessary because allocations by the WPB Rubber Bureau amounted to only 1,000,000 passenger tires in April, less than 65% of the 1,600,000 March quota, and marks the first time since last May that the monthly quota has fallen below 1,500,000.

First priority, classed as Group I, is limited almost entirely to persons whose occupations are of emergency nature and to workers at establishments faced with production emergencies. Group II includes persons employed in other essential plants and those whose occupations are highly important to the war effort. Group III includes such occupations as buyers for essential establishments and persons who travel to essential establishments on request to perform necessary technical services. Group IV takes in all other persons eligible for Grade I passenger tires.

Volunteer assistants of local War Price and Rationing Boards visited tire and tire repairing firms the last half of April to check dealers' prices for tires and services and inspect their records and postings in a nation-wide compliance survey for OPA. This survey follows the revision of MPR 528, effective March 27, retaining all the previous posting and record-keeping requirements and adding some others. The action included general revision of the prices on used tires and tubes, some changes and additions to the previous ceilings listed on new tires and tubes, and changes of specific maximum charges for recapping and repairing services. The survey has three major objectives: (1) to determine the degree of compliance with two regulations (RMPR 528 and the provision of MPR 165 covering "extra" service charges); (2) to explain and clarify requirements for dealers; (3) to correct any instances of non-compliance.

Members of the Tire Chain Industry Advisory Committee at a recent meeting requested WPB officials to investigate the necessity of new facilities now under construction, WPB stated April 28. The industry, members said, is now meeting its schedules for tire chains and questions the advisability of continuing with the plans for expansion. Previously, the members declared, the lag in tire chain production had seemed to warrant the construction of the new plants, but the last few months have seen a change in the situation. The new plants cannot be expected to go into production for months, and with the facilities now in operation, if material is made available, the industry is confident of its ability to handle all orders.

Footwear Order Revisions

Order 43 to Supplementary Order 94 establishes maximum retail prices for sales by the United States Treasury Department, Procurement Division, of reconditioned used flying shoes—used type A-6, with rubber sole and heel, fleece lining, and zipper.

Retail ceilings for men's half and whole heels, women's cuban and scoop heels, boys' whole heels, and junior and junior wedge heels, when sold unpackaged and without nails, became effective April 9. At the same time ceilings were also established on the same types of heels when sold in bulk by manufacturers and wholesalers.

Also effective April 9 were manufacturers' and wholesalers' dollar-and-cent ceilings for several new types of rubber heels and soles sold for use by shoe repair shop. These items, which have not been produced since shortly after Pearl Harbor, but which manufacturers now plan to make again, include galosh and over-the-shoe soling slabs, heavy toplift strips, and rubber boot heels. Retail maximum prices on these products will be established later.

(Amendment 11 to MPR 477—Sales of Rubber Heels and Soles in the Shoe Factory and Home Replacement Trades; and Amendment 20 to MPR 200—Rubber Heels and Soles in the Shoe Repair Trade.)

Order 1 to MPR 200 sets maximum prices for sales in the shoe repair trade of men's brown and black wood core super-grade half heels and women's brown and black wood core super-grade Cuban heels, bearing the brand name Goodrich D Cushion or Vogue and made by Hood Rubber Co., Watertown, Mass., and also of the special competitive-grade women's Cuban brown heels and the special competitive-grade 3/8-inch Junior wedge heels manufactured by Webster Rubber Co., Sabattus, Me. Order 2 does likewise for super-grade, extra-heavy, composition, 14 iron, size 17/19, black and brown half soles, products of Holtite Mfg. Co., Baltimore, Md.

Dealers whose stocks of men's rubber boots and rubber work shoes have been damaged by fire or other accidental cause to the extent that they cannot be sold for ration certificates may be authorized by their OPA district office to mark and sell the footwear ration-free, according to Amendment 16 to RO 6A—Men's Rubber Boots and Rubber Work Shoes—effective April 2. Similar provision is made for non-rationed sales of unmatched rubber boots (singles), also to be permitted after authorization by the dealer's OPA district office. Price restrictions apply to these non-rationed sales. One dollar a pair is the highest price for damaged boots, and 50¢ for single boots.

Ration rules covering men's rubber boots and rubber work shoes acquired for export or actually exported to a foreign country were tightened by Amendment 17 to 6A, effective April 25, which also permits OPA district offices to make temporary loans of rubber footwear certificates, rather than permanent inventory increases, to dealers whose business conditions temporarily require a larger inventory, and also to exchange several single certificates for one multiple certificate, whch is easier for the dealer to handle. The export action provides that only a government agency may obtain rationed rubber footwear for export purposes without a ration certificate. Formerly, no one needed a certificate if the rubber footwear was acquired for export. The new requirement was imposed because of the possibility that rationed articles might not be exported at all, but used by the supposed "shipper" or transferred to local dealers. At the same time the export restrictions of the FEA were clarified in the ration order. Dealers may continue to export rationed rubber footwear without certificates, but they must obtain individual export licenses from FEA. Licenses are not required for exports to Canada or to an Army or Fleet Post Office address. A dealer who has exported rubber footwear may get replacements by applying to his OPA district office for a replacement certificate. His application must be accompanied either by an export declaration certified by the Collector of Customs, an ocean bill of lading signed by the steamship company, or, if the rubber footwear was mailed, a certificate of mailing signed by a Post Office employe.

Rulings on Other OPA Orders

Increases have been sanctioned in manufacturers' and wholesalers' ceilings for medium and low priced hot water bottles, combination syringes and fountain syringes. But retail maximum prices remain unchanged, in line with OPA's policy of requiring wholesalers and retailers to absorb, wherever possible, any rise in their suppliers' prices. Existing ceilings for higher priced hot water bottles and combination syringes also are not affected.

On higher priced fountain syringes, known as hospital grade, which have recently appeared on the civilian market after being out of production since early in the war, dollar-and-cent ceiling prices at all levels of distribution were established at approximately prewar prices for this type of syringe. The new retail ceilings range from $1.33 to $1.92 each.

OPA also announced that minimum specifications have been raised on rubber flat goods generally, including hot water bottles, combination syringes, fountain syringes, ice caps, invalid rings, and tubing for combination syringes. These are specifications of manufacturing that must be met by the products before they can be sold at the established ceiling prices. They had been temporarily lowered during the conversion to synthetic rubber. Manufacturers' experience in producing synthetic rubber items in the last year indicates that higher quality items can now be made than at the time when synthetic rubber was first used. Current production of these items is already at or above the new minimum specifications, OPA said.

Another change drops the term "Victory Line" as a designation for synthetic rubber flat goods. Manufacturers are now permitted to make these items in as high quality as they wish; so the term "Victory Line" is no longer descriptive.

These changes, which become effective at the manufacturing level on April 23, 1945, and effective May 17, 1945, at wholesale and retail levels, are included in complete revisions of the two regulations establishing ceilings on rubber druggists' sundries. (RMPR 300—Rubber Drug Sundries—effective April 23, and RMPR 301—Retail and Wholesale Prices for Rubber Drug Sundries—effective May 17.) A time lag between effective dates was provided so that wholesale inventories will be sold at existing prices and not at the increased price levels announced April 17.

The increases in ceiling prices of medium and low priced hot water bottles, combination syringes, and fountain syringes, at manufacturing and wholesale levels, will raise the ceilings for the medium priced lines 2¢ per item on manufacturers' sales and 1¢ per item on wholesale sales; while the ceilings on low priced lines are raised 4¢ per item on manufacturers' sales and 3¢ per item on wholesale sales.

Increases at the manufacturing level have been granted to compensate in part for increased costs resulting from the use of synthetic rubber and for higher operating costs generally. The increases granted manufacturers will be absorbed partly by wholesalers and partly by retailers so that selling prices to consumers are not increased.

Amendment 2, MPR 297—Gums and Natural Resins—effective April 21, establishes buying ceilings for purchases of Congo Copal gum in the Belgian Congo by United States buyers and also adjusts domestc prices for the same grades of natual resins so as to restore the margin real-

ized in March, 1942. Besides, the ceilings for processed natural resins are, in general, adjusted to allow for resulting increased acquisition cost of the primary grades of gum.

Order 49, MPR 149, effective April 5, authorizes ceilings for sales by the manufacturer and by wholesaler of specified types and sizes of rubber wire inserted radiator hose made by Acme Rubber Mfg. Co., Trenton, N. J.

Region I Order G-2 under SO 94 establishes ceilings for wholesale and retail sales in New England of used Navy life belts of heavy duck fabric coated with liquid latex on the inside, inflatable by oral tubes.

Order 3524, MPR 188, approves ceilings for a 4½-inch diameter rubber sink stopper made by Carme, 335 S. Dearborn St., Chicago, Ill.

Order 3664, MPR 188, establishes maximum prices for certain sports balls made by W. J. Voit Rubber Corp., 1600 E. 25th St., Los Angeles, Calif.

United States Treasury Department, Procurement Division, Washington 25, D. C., recently reported that sales of consumers goods by its Office of Surplus Property for February totaled $7,156,372.23. These items, mainly surpluses turned over by the Army and Navy, included: $11,460 for rubber raincoats sold to United States Rubber Co., Mishawaka, Ind.; $8,604, raincoats and slickers, to Northwestern Sales Co., Chicago, Ill.; truck and bus tires, $5,359, U. S. Rubber, New York, N. Y.; tires, $16,301, U. S. Rubber, Portland, Ore.

Sales of consumer goods in March realized $6,023,573.22, including $14,477 paid by Post Distributors, New York, N. Y., for 6,894 rubber blankets.

The Treasury Procurement Division also recently announced the temporary discontinuance of the disposal plan for surplus Class C-1 grade army tires, which was inaugurated a few months ago for channeling such tires through manufacturers to dealers for repairing and immediate disposal to relieve to the greatest possible extent shortages in the civilian market. The cancellation of the program is due to the urgent need of this type of tire by the military forces. The War Department states that "Grade C-1 used tires formerly declared surplus to the War Department and reported to disposal agencies for disposal are now being retained by the Army in order that they may be reclaimed and reissued for military use. This will serve to increase the Army's supply of usable tires to meet the existing shortage."

Foreign Economic Administration, Washington, D. C., in "Current Export Bulletin No. 238," April 17, 1945, states that exporters may apply to FEA to export, under certain conditions, tires and tubes for passenger cars and motorcycles to destinations in the Middle East.

Bureau of Mines, United States Department of the Interior, Washington, D. C., is prepared at its Central Experiment Station, Pittsburgh, Pa., to conduct tests of gas masks to determine their permissibility. The Bureau, consequently, recently issued Schedule 14E, Subchapter B—Respiratory Protective Apparatus; Tests for Permissibility; Fees, Part 13, for the information and guidance of those desiring to submit gas masks for approval and also to inform consumers and other interested persons regarding qualities which the Bureau believes gas masks should have.

MIDWEST

Charles F. Fryling

Fryling with Phillips Petroleum

Charles F. Fryling has been placed in charge of fundamental research on rubber polymerization for Phillips Petroleum Co., Bartlesville, Okla. At present he is residing at Bartlesville, but he expects soon to spend full time at the new Phillips research laboratories in Phillips, Tex. Dr. Fryling, active in polymerization research and development since 1937, until last June was resident supervisor at the Kent State Laboratories of The B. F. Goodrich Co., Kent, O. Since then he has served temporarily as assistant chief, Copolymer Research Branch, at first in the Rubber Director's Office and lately with Rubber Reserve Co., Washington, D. C. Dr. Fryling received the B.S. degree in 1920 from Lafayette College, Easton, Pa. An M.S. in 1923 and a Ph.D. in 1924 were acquired at New York University. In 1925-26 he held a national research fellowship at Princeton University. His industrial research activities have been varied, first with Combustion Utilities Corp., followed by a period with the Illinois State Geological Survey at Urbana, Ill. Associations of which he is a member include Alpha Chi Sigma, American Chemical Society, and the American Institute of Chemical Engineers. He is married and has two sons.

Monsanto Chemical Co., St. Louis, Mo., held its forty-fourth annual stockholders' meeting on March 27 with Chairman Edgar M. Queeny presiding. All directors were reelected unanimously. President Charles Belknap stated that from the standpoint of new products announced for the first time, 1944 was the most fruitful year in the history of the company, and despite the shortage of technical personnel and restrictions on equipment which handicapped research Monsanto brought out 62 new products last year, all with war applications and many with outstanding promise for peacetime markets. Included are Cerex, the first thermoplastic to withstand boiling temperature; Styramic HT, a plastic for radar and other high-frequency installations; Thalid, a resin that virtually eliminates size as a limiting factor in the plastics industry; and a wide range of new industrial chemicals. Other speakers at the meeting were Wm. M. Rand, vice president; Charles Allan Thomas, director of Monsanto's central research laboratories; and Donald Powers, director of textile research and development.

Charles E. Caspari, Jr., of the Monsanto company, recently was elected secretary of the Associated Drug & Chemical Industries of Missouri.

The C. P. Hall Co. of Illinois on April 15 opened a new chemical plant at 5145 W. 67th St., Chicago, Ill., to serve the midwestern and southern United States. Plasticizers and chemical softeners will be the principal products of the new plant. Initial production of the plasticizers has been placed at 100,000 gallons a month. Average production is expected to reach 250,000 gallons monthly, and capacity output is estimated at 350,00 gallons of chemicals a month. Factory, warehouse, and office occupy 53,000 square feet of land. The warehouse will handle carbon black, zinc, and other chemicals necessary to rubber products manufacture. The C. P. Hall Co. also maintains quarters in Akron, O., the main office, and also in Los Angeles, Calif.

American Mineral Spirits Co., Chicago, Ill., has appointed Ralph C. Swann director of research. He has had extensive experience with several large companies in the petroleum industry.

Inland Rubber Corp., Chicago, Ill., has made James H. Higgins, formerly manager of Production and Priorities Division, Office of Rubber Director, general project manager in charge of constructing and equipping the new $7,000,000 tire plant which Inland will operate at Ottawa, Ill. Construction of this new plant, which will manufacture military tires exclusively for the duration, was begun March 27. Mr. Higgins served Goodyear Tire & Rubber Co., Akron, O., in several capacities between 1928 and 1942, when he joined WPB and later ORD. He resigned his government post in the Fall of 1944 and returned to the Kelly-Springfield Tire Co., Cumberland, Md., a Goodyear subsidiary. Mr. Higgins will make his headquarters at Inland's general offices, 33 S. Clark St., Chicago. Inland, a subsidiary of Minnesota Mining & Mfg. Co., St. Paul, Minn., is one of the largest suppliers of vulcanizing sections for the repair of combat tires used by the U. S. and Allied Armies.

Chrysler Engineering Corp., Detroit, Mich., has added W. J. Simpson to its rubber and plastic laboratories. Receiving his chemical engineering degree from the University of Illinois, Mr. Simpson was with Goodyear Tire & Rubber Co., Akron, O., from 1934 to 1944, serving in the control and physical testing laboratory, the production squadron, and in sole and heel compounding. Being a molded goods compounder since 1937, he transferred to the St. Mary's plant of Goodyear when that plant was started and remained there until the Chrysler appointment.

Surplus Property Board, Washington, D. C., on April 2 issued SPB Regulation 1 and Orders 1-3 thereto covering the designation of disposal agencies and procedures for reporting surplus property located within the United States, its territories, and possessions; assignment of surplus property; location of disposal agency offices; and forms for declaration of surplus.

EASTERN AND SOUTHERN

The Okonite Co., Passaic, N. J., and **The Okonite-Callender Cable Co., Inc.,** on April 17 and 18 held annual meetings at which the following *new* directors and officials were elected or appointed. A. F. Metz was elected vice president of both companies and a member of both executive committees. Mr. Metz, also reelected treasurer of both companies, has been a director of The Okonite Co. since 1928 and of the Okonite-Callender Cable since 1941. E. J. Garrigan was elected a director of both companies and also reappointed vice president and factory sales manager. A. L. McNeill recently named district manager of the companies' Chicago territory, was also appointed a vice president of both firms. John L. Griggs was elected a director of Okonite-Callender Cable Co.

Raybestos-Manhattan, Inc., Passaic, N. J., held its annual meeting April 3, when stockholders were informed that the company would spend between two and 2½ million dollars for postwar repairs and replacements. In return for the plant at Whippany, N. J., sold to the Flintkote Co., Raybestos will receive 19,513 shares of Flintkote common stock, according to President Sumner Simpson. Raybestos plans to transfer some of its reclaimed rubber operations from Whippany to its plant at Passaic and also purchase reclaimed rubber from Flintkote. Raybestos expects before long to be making again synthetic rubber bowling balls, rubber billiard table strips, and some rubber accessories which it had to eliminate during the war.

Baldwin-Southwark Division, Baldwin Locomotive Works, Philadelphia, Pa., has announced a new method of molding rubber on a small high-speed press, a development of the Baldwin "Hyspeed" plunger molding press for plastics announced at the end of last year.[1] The press operates with a smaller number of cavities than are used in the conventional molding presses and, owing to its high speed, can produce the same number of products as the larger conventional presses. All types of mechanical rubber goods, plumbers' supplies, and other items needing cavity molding may be molded with this press. While this press can be used without preheating of the material, the use of an electronic radio frequency heating results in a still further increase in production. Westinghouse developed the radio frequency generators for use in conjunction with the new press, and, it is believed, any type of rubber may be handled. Successful experiments were conducted using GR-S. These presses can be furnished with self-contained units or may be arranged for operation with existing accumulator systems. In both cases the press can be fitted with automatic valve operation and timer and existing molds can be modified to utilize the new method.

Baldwin Locomotive Works has appointed C. A. Campbell export sales manager to succeed the late Clyde G. Pinney. Mr. Campbell came to the company as a shop apprentice on August 1, 1919, and advanced to various important assignments. His most recent post, district manager of the Washington, D. C., office, is now held by Milton W. Brooks, also a veteran Baldwin employe.

[1] INDIA RUBBER WORLD, Feb., 1945, p. 588.

Robert G. Allen

Schranz Resigns

Frederick G. Schranz, vice president of Baldwin Southwark Division of The Baldwin Locomotive Works, Philadelphia 42, Pa., since 1941, resigned as an officer of the company, effective April 30. He will, however, act in a consulting capacity. Mr. Schranz became associated with Southwark Foundry & Machine Co., which later became Baldwin Southwark Division of Baldwin, in 1915 and served in various capacities, including the position of vice president in charge of sales and engineering. After Southwark became a part of Baldwin, Mr. Schranz was made manager and later divisional vice president of Baldwin Southwark Division.

Robert G. Allen has been appointed general manager of Baldwin Southwark Division. Mr. Allen, born in Winchester, Mass., attended Phillips Andover Academy and Harvard University. In 1925 he joined the Walworth Co. and was division sales manager from 1929 until 1936. Then from 1936 to 1940 he served two terms, as Representative from the 28th Pennsylvania District, in the Congress of the United States, during which time he was on the Foreign Affairs Committee. Mr. Allen was elected president of the Duff-Norton Mfg. Co., in 1940, and remained as such until July, 1942, when he was granted leave of absence to accept a commission as major in the United States Army, Ordnance Department. He served as chief of Tank Branch and later executive officer of Philadelphia Ordnance District. In February, 1943, he was promoted to the rank of lieutenant colonel and a few months later was transferred to field service and sent overseas where he served as battalion commander and group commander. He was ordered back to the United States in November, 1944, and placed on the inactive list January, 1945. Mr. Allen is married and has two daughters and one son.

Controllers Institute of America, 1 E. 42nd St., New York 17, N. Y. has elected to membership John W. Osbon, controller of the Pennsylvania Rubber Co., Jeannette, Pa., and Elmer H. Paradies, control manager of the United States Rubber Co., Los Angeles, Calif.

Intercontinental Rubber Co., Inc., 745 Fifth Ave., New York 22, N. Y., in its recent annual report to stockholders revealed that its guayule production last year totaled 13,444,520 pounds, contrasted with 13,451,700 pounds in 1943 and 12,663,800 pounds in 1942. Sales for 1944 were 11,007,220 pounds. The company also stated that the intensive harvesting of wild shrub under war requirements has resulted in a constantly diminishing rubber content. Average rubber extraction for 1942 was 13.2% of the invoice weight, for 1943, 12.35%, and for 1944, 11.79%. Shrub milled for the three years amounted to 43,317, 48,204, and 50,952 metric tons, respectively. The capacity of the company's Cedros plant has been raised from 30 to 40 metric tons a day, and the Torreon plant is now being increased from 75 to 100 tons daily. This greater capacity is desired for maximum output during the war period and is justified by the prospective increased shrub supply that will result from last year's rains. The Catorce plant it is said, can probably maintain full operations for another year, but will then be shut down with little prospect of resuming.

Westinghouse Electric Mfg. Co. stockholders, Pittsburgh, Pa., at their recent annual meeting voted to split the company's stock on the basis of four shares to one to broaden the basis of ownership and also to change the company name to Westinghouse Electric Corp. for simplicity and brevity.

Thomas Robins, Jr., has been elected president of Robins Conveyors, Inc., Passaic, N. J., to succeed Thomas Matchett, retired. Mr. Robins is also vice chairman of the board of National Synthetic Rubber Corp., Louisville, Ky., president of Hewitt Rubber Corp., Buffalo, N. Y., and a director of the Federal Reserve Board of New York.

The Glenn L. Martin Co., Baltimore, Md., recently revealed that special synthetic rubber fuel tanks added to the range of the B-25's with which Doolittle raided Tokyo for the first time. It was stated that 163 extra gallons of high octane gas in these tanks added about 500 miles to the cruising range of these airplanes. Martin received the patent rights on this cell in December, 1937. The cells can be manufactured to fit any empty space desired. The specifications for the cell to be used in the B-25 bomber were rushed to the United States Rubber Co., Mishawaka, Ind., which handled the manufacturing end. All stitching and seams of the Martin cell are covered with cemented strips so that they are liquid tight and no fumes can escape.

Howard R. Huston, assistant to the president of American Cyanamid Co., Rockefeller Center, New York, N. Y., is chairman of the manufacturing group in the Greater New York Fund's eighth annual campaign. Herbert E. Smith, president of United States Rubber Co., Rockefeller Center, New York, is chairman of the rubber division of the manufacturing group.

Foster D. Snell, Inc., firm of consulting chemists and chemical engineers, 305 Washington St., Brooklyn 1, N. Y., has added to its staff as director of engineering David Gordon, recently chief engineer for the Interchemical Corp.

U. S. Rubber Announcements

Value of production of the company for war and essential civilian purposes in 1944 was more than $933,000,000, Herbert E. Smith, president, reported April 17 at the annual stockholders' meeting in Passaic, N. J., of United States Rubber Co., 1230 Sixth Ave., New York 20, N. Y. Of this amount, war production accounted for $756,138,730, or 81 per cent, $100,000,000 more than the company's war output in 1943.

Sales for the first quarter of 1945 were more than 10% ahead of the corresponding period of last year, Mr. Smith announced. On the basis of current outlook, he declared, the company hopes to maintain common dividends on a regular quarterly basis.

Through research and experimentation the company substantially increased consumption of synthetic rubber in 1944. By the year's end its use of synthetic had risen to 84% of the total amount of rubber used. The three synthetic rubber plants operated by the company produced 161,951 tons of rubber in 1944, which was more rubber than the company consumed in manufacturing all its thousands of peacetime products in 1941. In addition, the company developed during the year 53 new types of synthetic rubber.

Mr. Smith also announced that U. S. Rubber is producing a new family of liquid plastics known as Vibron.

Ground has been broken at Havana, Cuba, for a U. S Rubber plant where tire recapping materials and rubber-soled canvas shoes will be manufactured. L. C. Boos, vice president and general manager of United States Rubber Export, Co., Ltd., and Mayor Andres Embade, of Santa Maria del Rosario, officiated at the ceremony. The plant is scheduled to be completed and in production by July.

Four of the company's textile mills will install 80 new units of machinery to meet increased production schedules for war purposes. Installations will be made at Winnsboro, Shelbyville, Tenn., and the Reid and Stark Mills, Hogansville. These new units will improve both quality of production and working conditions at the plants. Three high-speed spooling machines and three warpers are to be added at Shelbyville. Twenty long draft spinning frames are also to be set up there. At the Hogansville plants 50 new spinning frames are scheduled to be installed. Modern machinery will be used in the cotton bale opening room, resulting in cleaner finished products. New vacuum stripping units will be employed at the four mills on carding machines. These units will eliminate a considerable portion of the dust which results from the processing.

J. P. Coe, general manager of the Naugatuck chemical and synthetic rubber divisions, recently announced that 53 new synthetic rubbers were produced during 1944 in three government plants operated by the company. Of these, eight types have been adopted for regular use in the manufacture of insulating materials, storage battery separators, asbestos sheet packing, and pressure sensitive adhesives. In the past year 14,000,000 pounds were made for these uses. Of the other 45 types, many are being evaluated, and it is expected that additional uses will develop. This work is being carried out under the supervision of Rubber Reserve Co. as part of the government's synthetic rubber program.

Engineers of U. S. Rubber and Army Ordnance officers in Detroit working together have produced a new patching device which will plug holes ranging in size from one-half to four inches in diameter in tanks punctured by gunfire so that these holes can be sealed in less than 30 seconds. The device, also effective against damage by small arms ammunition and also larger shells up to 20 millimeters, consists of a rubber ring of synthetic rubber and a patented spring clamp. In use, one end of the clamp is inserted through the hole, and two metal fingers open to grip the inside of the tank, drawing the patch tight to the outside. The patch is temporary; when feasible, it is welded permanently. The soft rubber deflects to any shape and works on cylindrical or irregular surfaces and is made of a special material resisting the effects of oil and gasoline.

According to W. W. Cowgill, director of the war products division of U. S. Rubber, we may expect, in postwar years, conductive rubber plumbing and heating units that will look like wallpaper. A light raincoat which one could carry in one's pocket, and waterproof footwear are some other applications of synthetic rubber in postwar years. The future world demand for synthetic rubber of all types will be between 300,000 and 700,000 tons, Mr. Cowgill added.

R. C. Harrington has been promoted to technical director of the textile division, in charge of development, engineering, quality control, purchasing and technical contacts with the trade. Mr. Harrington came to U. S. Rubber as apprentice in 1928 immediately after graduating from Clemson College. He was advanced to technical superintendent of the Winnsboro, S. C., plant during 1933 and transferred to the general manager's office at Hogansville, Ga., as technical assistant to the general manager in 1938. He was promoted to assistant to the general manager during 1941 and transferred to the New York general offices, a position he held until his recent advancement. Mr. Harrington is in a large part responsible for the organization of the central development laboratory, now located at the Hogansville plant. This department was started in 1938, and the findings of facts gleaned through experimentation at this unit have assisted greatly in the development of Ustex yarn and Asbeston.

W. E. Clark, production assistant to H. Gordon Smith, general manager of the textile division, U. S. Rubber, has been promoted to assistant general manager of that division. Mr. Clark started with the company at the Stark Mills, Hogansville, Ga., as a clerk on May 1, 1931. He was advanced to the textile division's general office staff during 1932 as coordinator of production, where he remained until 1935 when he was transferred to the Stark Mills to take charge of the installation of labor standards and wage incentive planning. During 1937 he was sent to the general manager's office to be in charge of installations of similar labor systems in the Winnsboro, S. C., and Shelbyville, Tenn., plants. Then in 1939 he was made production assistant to the general manager.

Howard W. Kelsey was made sales promotion manager of the general products division, U. S. Rubber. He has had more than 17 years experience in advertising and sales promotion work. Since June, 1944, however, he has been handling wire and cable promotion in the rubber company's mechanical goods division.

Luther B. Martin has been named director of tire development and research of U. S. Rubber with headquarters at Detroit. A native of South Carolina, Mr. Martin was graduated from Clemson College in 1906 with a B.S. in chemistry, and from the National Law School at Washington, D. C., in 1910 with the degree of L.L.B. He came to the rubber company in April, 1918, as a chemist at its Hartford Rubber Works, Hartford, Conn., where he later was made chief chemist and, eventually, factory manager. He was transferred to Detroit in 1929, where he became manager of tire quality and, later, assistant director of tire development. Mr. Martin is present chairman of the ordnance advisory committee of the Tire & Rim Association and a member of the WPB Tire & Tube Technical Consulting Committee and of the Synthetic Test Committee of the Tire Industry.

Arthur W. Bull has been appointed associate director of tire development of the company with headquarters at Detroit. A native of New York, Dr. Bull was graduated from Cornell in 1919 with a B.S. in chemistry. He spent a year at Haverford College as instructor in qualitative analysis, returning to Cornell as du Pont Fellow in chemistry and receiving his Ph.D. in 1922. He joined U. S. Rubber in 1928 at its general laboratories in Passaic, N. J., and later was transferred to the tire development department at Detroit. At the outbreak of the war Dr. Bull did notable work in the development of bullet-sealing fuel tanks for airplanes and subsequently was made manager of the tire engineering department at Detroit.

Raymond A. Blake has been made general service manager of the company's tire engineering and service department with headquarters in Detroit. Branch service activities remain under the supervision of Frank L. Krause, also of Detroit, branch service manager, reporting to Mr. Blake.

Watson I. Ford, has been named chief field engineer for the tire division, with headquarters in Detroit, and all field engineering activities, both staff and field, will report to him.

The Thermoid Co., Trenton, N. J., and domestic subsidiaries reported sales of $1,946,844 for March and $5,664,276 for the first quarter this year. The respective figures for the 1944 periods were $1,941,101 and $5,515,243.

M. Barbanell, Inc., crude rubber importer, 80 Broad St., New York 4, N. Y., on April 18 changed its name to the South Asia Corp.

N.A.W.M.D. Annual Meeting

National Association of Waste Material Dealers, Inc., 1109 Times Bldg., New York, N. Y., held its thirty-second annual meeting —curtailed because of ODT regulations—at the Hotel Astor, New York, on March 21. All officers were reelected including Julius Muehlstein, second vice president, who is also treasurer of H. Muehlstein & Co., Inc., 122 E. 42nd St., New York. Among the 17 directors elected, half the board, was Jack Sider, president of The Loewenthal Co., 188 W. Randolph St., Chicago 1, Ill.

In his address Paul J. White, Association president, reported that the Scrap Rubber Institute, one of the divisional associations, during the past year in making substantial membership gains, brought in an entire group previously known as the Tire Patch & Reliner Manufacturers Association of America.

Witco's Silver Jubilee

The Witco Chemical Co., 295 Madison Ave., New York 17, N. Y., is observing the twenty-fifth anniversary of the founding of the company during the present month. When Witco, originally known as Wishnick-Tumpeer, Inc., was founded on May 4, 1920, by Robert I. Wishnick and associates, World War I was of recent memory and the nation was on the verge of a period of general business deflation.

In the words of Mr. Wishnick, "Looking back, the times may not seem to have been particularly auspicious for the launching of a new enterprise for the purpose of marketing chemical products. However, we did know that the then relatively small American chemical industry must expand and grow to realize the chemical independence of the United States and assure the expansion and prospering of other American industries. The record of the past 25 years speaks for itself. These years have embraced some of the most momentous events in the history of the world. . . . We are indeed proud that in its growth under the American free-enterprise system, the Witco Chemical Co. has been able to contribute its research, product development and manufacture to the national security and well-being."

Products now manufactured and marketed under the Witco name comprise hundreds of light and heavy chemicals, channel- and furnace-type carbon blacks, asphalts and asphalt specialties, colors, clays, and pigments. As early as 1921, Witco acquired the Century Carbon Co. and then in 1933, the Panhandle Carbon Co. In 1936, Witco formed the Continental Carbon Co. and completed in the following year one of the most modern and largest single channel carbon black plants in the country. A new furnace black plant was completed in 1944, and two new Continental plants, one at Sunray, Tex., which went into operation on April 5, and another to be completed at Witco, N. M., on July 1, will add further to the company's facilities. Witco has also expanded in the asphalt and chemical specialties industries and recently organized an automotive specialties division for the purpose of further developing and marketing special mastics, bag sealing compounds, and rust inhibitors for the protection of ordnance material during shipment and storage.

In 1938, Witco completed and placed in operation a new research and development laboratory on the site of the company's 20-acre asphalt plant in Chicago. Here much attention has been devoted both to research in carbon blacks in connection with synthetic rubber compounding and to the development of the new asphalt derivatives.

Farm Market Potential

At a recent meeting of the farm marketing group of the American Marketing Association, Franklin R. Cawl, director of research for Arthur Kudner, Inc., indicated the tremendous potential in the immediate postwar era of the farm market of special interest to the rubber industries. Studies have revealed that in more than 300 places rubber is used on the farm. Tractors, trucks, passenger cars, and implements all using rubber tires are found on the farm. Farm families use 15 million feet of rubber hose annually. Each year 1,783,000 pounds of rubber bands are sold for packing the farmers produce for market. Farm women, moreover, use 162 million rubber jar rings. The "greatest baby producing market in normal times" uses 2,386,000 nipples and 336,000 rubber sheets. More additions to the list are 350,000 syringes, 277,000 hot water bottles, 2,505,000 pairs of rubber boots a year, and 7,830,000 pairs of rubbers. All this is far more than the average city uses for the same number of people Dr. Cawl added.

Back Issues Wanted

We are very anxious to secure copies of the following old numbers of INDIA RUBBER WORLD and will pay 25¢ plus postage for each copy received in good condition: September, 1935; October, 1935; December, 1935; June, 1936; October, 1936; December, 1936; January, 1937; February, 1937; March, 1937; June, 1937; September, 1937; October, 1937; January, 1938; April, 1938; June, 1938; January, 1939; February, 1939; December, 1939; January, 1940; March, 1940; April, 1940; January, 1941; March, 1941; April, 1941; August, 1941; November, 1941, June, 1942; January, 1943; February, 1944.

Continental Carbon Co., 295 Madison Ave., New York 17, N. Y., through Robert I. Wishnick, president, has announced the start of operations at the government-financed channel-type carbon black plant designed to help meet emergency requirements for the product in the synthetic rubber industry. The plant, placed in operation April 5 at Sunray, Tex., is the first of the DPC plants to start production. This new plant will add many millions of pounds of urgently needed carbon black to the nation's production facilities. A second plant, further increasing channel black production capacity, is being rushed to completion at Witco, N. M., by the Panhandle Carbon Co. The two plants, when completed, will add capacity for 45,000,000 pounds of channel black per year. The production of Continental and Panhandle Carbon companies is marketed through the Witco Chemical Co., also of 295 Madison Ave., New York.

OHIO

Goodrich Developments

The appointment of Ward Keener as assistant to the president of The B. F. Goodrich Co., Akron, was announced March 24. The position, however, had been assigned to Mr. Keener before President John L. Collyer was appointed Special Director of Rubber Programs on March 21. Mr. Keener, who joined the company in 1937, has served in a wide field of activities. In 1942 he became director of business research and the following year assistant to the vice president for finance. Born in Birmingham, Ala., Mr. Keener was graduated from Birmingham Southern College and received his master's degree in business administration at the University of Chicago. He is married and has two sons.

Dean E. Carson has been named director of business research, succeeding Mr. Keener. Mr. Carson, a native of Ohio, was educated in the public schools and at Mt. Union College and served in the U. S. Army in World War I. He was hired by the Miller Rubber Co. in 1920 and became a member of the Goodrich organization in 1930, with the merger of the two companies. Mr. Carson has held various important posts in the accounting, operating, control and personnel divisions, having entered the business research department in 1943.

Harold W. Rehfeld has been named factory manager of the new government tire plant, in Tuscaloosa, Ala., being built and to be operated by Goodrich. Mr. Rehfeld, recently returned from Europe after serving as technical advisor and special consultant to the Commanding General of the Army Service Forces, received a commendation for exceptional civilian service from the War Department for speeding tire production in French and Belgium plants far beyond anticipations. He had joined Goodrich in 1929 after graduation from the University of Minnesota and had been production manager in the tread and calendar room of the company's Akron plant when he was given his assignment by the Army last year. He had previously served as manager of the company's tire manufacturing plant at Oaks, Pa., and manager of technical laboratories in the Los Angeles, Calif., plant.

The new Tuscaloosa plant is one of the largest units in the $70,000,000 government tire plant program announced earlier this year. The principal factory building will be 1,200 feet long and 300 feet wide and have a total of 550,000 square feet of floor space. Part will have a second floor.

Construction is proceeding rapidly for this big new DPC heavy-duty tire plant at Tuscaloosa. Steel erection for this daylight manufacturing plant was scheduled to start last month. Specially designed for large-scale production of truck, bus, and other automotive tires, the plant will be used chiefly for making heavy-duty military casings weighing 100 pounds or more. Six hundred tons of refrigeration are being installed for process cooling. The complete plant, including a two-story office building, boiler house, and other facilities will represent an investment of approximately $10,000,000, with a total of more than one-half million square feet of floor space.

A sales promotion department to serve the Goodrich replacement tire sales division in preparing retail advertising and sales promotion material has been established, with A. R. Bowlzer manager. Mr. Bowlzer joined the company in 1932 in the service department of its Los Angeles factory and became sales promotion manager in the Denver district of the replacement tire sales division a year later. He came to company headquarters in Akron in 1937 and since 1943 had been assistant manager of automobile tire sales.

A new district was established by Goodrich's tire sales division in Oklahoma City, Okla., with L. T. Greiner, district manager; R. L. Faulkenberry, store supervisor, and Alfred L. Vogt, wholesale supervisor and truck and bus tire manager.

Frank S. Thorpe, has succeeded Mr. Greiner as regional store manager of the company's central division with headquarters in Kansas City.

Goodrich has established a new division, B. F. Goodrich Chemical Co., with offices and laboratories in the Rose Bldg., Cleveland, and manufacturing plants in Ohio, New York, and Kentucky. The chemical company is engaged in the manufacture and sale of Geon vinyl resins, chemicals, and synthetic and reclaim rubbers.

William S. Richardson, with Goodrich since 1926, is president of the new organization. He has held executive positions

with B. F. Goodrich and is vice president of Hycar Chemical Co.

Joseph A. Hoban, merchandise manager of the Goodrich tire division, told the Industrial Marketers of Cleveland at the Hotel Statler on March 23 that America is now in the "third phase" of its global war rubber crisis and that this summer would be the most critical period yet faced with respect to keeping essential traffic rolling. The first phase was the acute shortage of rubber, which was "licked" by establishment of the synthetic rubber industry which will this year turn out a million tons of rubber. The second phase was the manpower shortage, and, while it will continue, great strides have been made in the solving of this vital problem. The third phase is the shortage of component parts needed in compounding rubber and turning it into manufactured products. The most acute shortage is carbon black.

In the discussion of postwar marketing problems in general, Mr. Hoban said that one of the broad-gage problems facing industry is that of "getting the American public back into its traditional devotion to the top grade, the premium item in any line."

Referring to the synthetic rubber program, the speaker stated that this was an example of what the United States could accomplish when its scientific brains, its management skill, and its government got to work to solve a problem. He stated that the same spirit could solve the problem of quick reconversion after the war to the pursuits of peace.

F. E. Titus, Pacific Coast division manager of the Goodrich company, was one of two co-chairmen who presided at seven sales council meetings held in Los Angeles recently to acquaint war plant operators with production, distribution, advertising, and other problems they will face in manufacturing consumer items after victory. The sessions were first of a series sponsored by the Los Angeles Chamber of Commerce.

On April 11, Goodrich filed with the Securities & Exchange Commission a registration statement covering $35,000,000 of first mortgage bonds due in 1965. Proceeds from this sale will be devoted to retiring $21,049,000 first mortgage 4¼% bonds, due in 1956, and $4,700,000 first mortgage 3s, due also in 1956; the balance will be placed in general funds for future plant expansions and changes.

General Tire Elections

L. A. McQueen, vice president in charge of sales, and S. S. Poor, vice president in charge of retail merchandising, on April 3 were elected directors of The General Tire & Rubber Co. at the annual stockholders' meeting in Akron. At a directors' meeting following the shareholders' session all officers of the company were reelected. William O'Neil, who has directed the activities of the company ever since its founding in 1915, was reelected president. Other officers are: W. E. Fouse, vice president and treasurer; C. J. Jahant, vice president; and Hayes R. Jenkins, secretary.

Mr. McQueen is a native of Superior, Wis. He was graduated from the University of Wisconsin in 1916 and went immediately into the rubber business in Akron, where he was an assistant advertising manager, advertising manager, and manager of tire sales. In 1929 he joined General Tire as trade sales manager. He later became sales manager and in 1940 was made vice president in charge of sales.

Mr. Poor is a native of Port Chester, N. Y. After 11 years with the United States Rubber Co. he went to Akron and in 1919 joined General Tire. He has served as New York district manager, general sales manager, and vice president in charge of retail merchandising.

New Footwear Plant for Goodyear

The Goodyear Tire & Rubber Co., Akron, plans erection of a new plant at Gadsden, Ala., for the exclusive production of rubber soles and heels. This plant will be in addition to Goodyear's existing tire plant in Gadsden. Some of the manufacturing will be done with facilities already in Gadsden. In addition a one-story building, 200 by 260 feet, will be built. Construction of the plant will start immediately, with completion scheduled for some time next summer.

Goodyear also operates a large rubber sole and heel plant in Windsor, Vt.

The new plant in Gadsden will turn out approximately the same products as the plant in Windsor. As long as government necessities exist, the bulk of all production will be for the Armed Forces. As soon as this necessity lessens, Goodyear will introduce several new and interesting products developed in its research laboratories and now ready for production.

Automotive accessories, home and auto radios, major home and traffic appliances, sporting goods, hardware and tools, wheel goods, toys and games, and housewares constitute Goodyear's proposed postwar line of car and home merchandise.

Goodyear has produced its millionth bullet-seal fuel cell in Akron; this extra-large cell was designed for the wing of a B-29 bomber. Pliofilm was also introduced to stiffen the cell exteriors so that the aluminum previously employed could be utilized for other war purposes.

Being lighter and stronger than cotton and less affected by high altitudes, rayon is being used for plies of fuel cells; fuel and oil cells take from five to nine plies of rubber-impregnated rayon fabric.

The Life Guard tube, a conventional inner tube with a two-ply fabric inner tire floating free inside it, but with the two joined at the base, has been put back into production. Previously it had been supplied only for military and naval warplanes. The company emphasized, however, that the production would be on a limited basis, and that only the four most popular sizes for civilian automobiles would be produced.

Appointment of United States Plywood Corp., New York, N. Y., as exclusive nation-wide sales agent for Pliobond, synthetic adhesive cement, was announced last month by Goodyear. Charles P. Joslyn, head of Goodyear's chemical products sales division, said Pliobond will be marketed through U. S. Plywood's 20 distributing units throughout the country.

Goodyear Officers Reelected

Following the stockholders' annual meeting on March 26, the board of the Goodyear company, reelected all officers, including Paul W. Litchfield, chairman of the board, and E. J. Thomas, president.

The stockholders had reelected the following directors: Messrs. Litchfield and Thomas, A. G. Cameron, H. L. Hyde, P. E. H. Leroy, A. G. Partridge, C. Slusser, R. S. Wilson, T. M. Girdler, E. B. Greene, J. R. Nutt, L. B. Williams, Robert C. Schaffner, R. E. Wood, Robert G. Payne, George A. Sloan, and C. F. Stone.

Messrs. Litchfield, Thomas, Leroy, Greene, Stone, and Nutt were reelected to the executive and financial committee.

R. D. Thompson has been named manager, and Ivan B. Goble, assistant manager, of the tire department of The Goodyear Tire & Rubber Export Co., Akron. These men will direct the overseas sales activities for all Goodyear tire products except bicycle and airplane tires. Mr. Thompson, with Goodyear since 1929, was a truck tire representative in Chile and then in Panama and Central America. After a special assignment in the West Indies, Mr. Thompson in 1937 was made sales manager of Goodyear-India, where he remained until 1944 when he returned to Akron. Mr. Goble has handled Goodyear sales assignments in Portugal and Brazil and was also a member of the merchandising department at Akron. He recently returned to this country from Sao Paulo, Brazil, where he had been manager of truck tire sales since 1940.

Three members of Goodyear's sales organization were presented service pins recently: H. E. Langdon, manager of mechanical goods sales, who completed two decades of service; and Joseph G. Swain, manager of rim sales, and L. J. Bornhofen, manager research sales, 15-year pins.

One of the National Association of Manufacturers' three representatives on the Citizens Federal Committee on Education, appointed to advise the Commissioner of Education on policies and programs of service to education to be carried on by the U. S. Office of Education, is Robert S. Wilson, Goodyear vice president.

An honorary degree of doctor of science was conferred last month upon George M. Sprowls, highway transportation manager for the Goodyear company, by Washington & Jefferson College.

Firestone Promotions

Firestone Tire & Rubber Co., Akron, on May 1 redeemed through its sinking fund 1,375 20-year 3% ($1,000) debentures, due May 1, 1961, at 100¾% of the principal together with accrued interest to May 1, 1945.

C. S. Gischel has been named manager of Firestone's newly created aircraft tire and accessory sales department. Associated with Firestone for a decade, he previously served as battery, spark plug, and auto supply sales representative, budget supervisor, store manager, and district store supervisor. As head of the new department, Mr. Gischel directs the first complete program for merchandising aircraft products to private fliers. Franchises are granted fixed airport operators to handle a complete line of aircraft products, accessories, and supplies. Many distributers and dealers have already been established, and additional franchises will be granted airport operators throughout the country. Products offered by Firestone include aircraft tires, tubes, wheels, brakes, batteries, spark plugs, brake lining, aircraft finishes and accessories, such as aviation jackets, fire extinguishers, tools, first aid kits, etc. Other items will be added soon.

Three members of the Firestone sales department have been promoted. V. D. Kniss was advanced from head of the truck and tractor tire sales department to manager of the tire division, E. H. Holmen was moved up from manager of national account sales to manager of the truck tire division, and R. A. Schlarb was promoted from central division truck and tractor tire representative to manager of the tractor tire sales department.

R. W. Davis has been appointed general sales manager for the Pacific Coast division of the Firestone Tire & Rubber Co. of California, Los Angeles, according to L. K. Firestone, president. Mr. Davis succeeds C. M. Barnes, transferred to the home office to become manager of the central division.

Another appointment is that of W. H. Ryan to the post of division store supervisor. His headquarters will be in Los Angeles.

Harvey S. Firestone, Jr., president of the Firestone company, will serve as a member of the advisory committee of the United Negro College Fund.

The Eagle-Picher Lead Co., Cincinnati, approved a name change March 27 at the annual shareholders' meeting. J. M. Bowlby, president, announced that the firm will be known as The Eagle-Picher Co. The word "Lead" was dropped because the management felt it restricted the public concept of the scope of the company's activities. For many years, Eagle-Picher has engaged in the manufacture and sale of numerous products not made of lead. Eagle-Picher has long been a major factor in the mining and smelting of zinc and an important producer of slab zinc and zinc oxides. In addition, Eagle-Picher is one of the largest and oldest fabricators of mineral wool insulation for home and industry. No transfer of personnel is involved. Also unaffected by the change are two wholly-owned subsidiaries, The Eagle-Picher Mining & Smelting Co. and The Eagle-Picher Sales Co.

Mansfield Tire & Rubber Co., Mansfield, held its annual meeting April 4 at which George W. Stephens was elected president for the twenty-third year. Other officers and directors were reelected, including: first vice president, P. H. Ober; second vice president, H. B. Soulen; secretary, James H. Hoffman; treasurer and assistant secretary, Carl L. Willsey; and board of directors, the company officers, Charles H. Hoffman, G. F. Sykes, and E. Paul Stephens.

The Timken Roller Bearing Co., Canton 6, has designed a new circular slide rule in its steel and tube division. This instrument is designed for use in computing the approximate hardenability of steel from its chemical composition and grain size in accordance with standard formulae.

Effective April 30, Tracy V. Buckwalter, chief engineer and vice president of Timken Roller Bearing, retired under the company's retirement annuity plan. Timken will, however, retain his services in a consulting capacity. Mr. Buckwalter came to the company in 1916 as chief engineer and was elected vice president in 1925.

Pharis Tire & Rubber Co., Newark, has appointed three new members to the technical staff of Molded Materials, Ridgway, Pa., a Pharis division. Andrew Mathieson has been named chief engineer of research and development. For the past 15 years he has been associated with the brake engineering departments of Bendix Aviation Corp. and Westinghouse. M. Wm. Nelson, connected with the brake lining industry for the past 30 years, has been made plant engineer in charge of development of new processes and equipment. A. H. Thompson will head the new department of passenger-car brake lining manufacture. For the past several years he had been with Marshall Eclipse Division, Bendix Aviation, in charge of the laboratory.

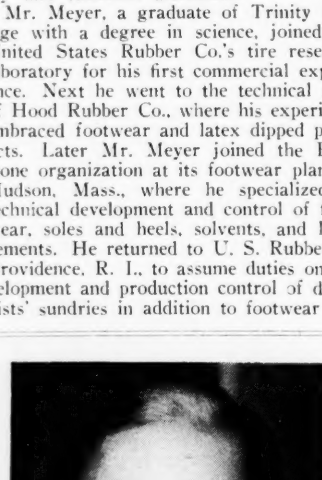
NEW ENGLAND

C. A. Meyer

Opens Boston Office

Standard Chemical Co., Akron, O., has opened a New England sales office at 335 Chamber of Commerce Bldg., Boston, Mass., with C. A. Meyer as its manager. This brings to the company's eastern market direct sales representation with complete warehouse stocks maintained in the Boston area for better service both on supply and technical assistance.

Mr. Meyer, a graduate of Trinity College with a degree in science, joined the United States Rubber Co.'s tire research laboratory for his first commercial experience. Next he went to the technical staff of Hood Rubber Co., where his experience embraced footwear and latex dipped products. Later Mr. Meyer joined the Firestone organization at its footwear plant in Hudson, Mass., where he specialized in technical development and control of footwear, soles and heels, solvents, and latex cements. He returned to U. S. Rubber, at Providence, R. I., to assume duties on development and production control of druggists' sundries in addition to footwear and commercial cements. Then he worked on mechanicals at the Firestone Latex & Rubber Co.'s Fall River plant, from which position he joined the Barrett Division of Allied Chemical & Dye Corp. as technical representative on rubber compounding materials. Mr. Meyer is also sergeant-at-arms of the New York Rubber Group for 1945.



Eric C. Gyllensvard

Cabot Buys General Atlas

Godfrey L. Cabot, Inc., Boston, Mass., as of April 1, purchased General Atlas Carbon, Pampa, Tex., which it will operate as a separate entity, General Atlas Carbon Co. This company will maintain the same personnel as before, including Carl J. Wright, who has been vice president and general manager of the former organization. For the time being he will remain in Texas.

Herron Bros. & Meyer, of New York and Akron, will continue as distributer for General Atlas products, and orders for Gastex and Pelletex should continue to be placed either directly through Herron Bros. or through its local agents, as in the past.

Cabot is a major producer of channel carbon black and an important factor in the production of furnace black. General Atlas Carbon is a pioneer producer of furnace blacks.

Farrel-Birmingham Elections

At the directors' annual meeting of Farrel-Birmingham Co., Inc., at Ansonia, Conn., March 15, Franklin Farrel, Jr., resigned as chairman of the board, and Alton Austin Cheney was elected his successor. Lester D. Chirgwin, general manager of the company's Buffalo plant, was elected vice president in charge of manufacturing, and Franklin Farrel, 3rd, plant manager, Ansonia-Derby plants, was elected secretary and assistant treasurer. Officers reelected were Franklin R. Hoadley, president; Carl Hitchcock, Armin G. Kessler, and Austin Kuhns, vice presidents; and Frederick M. Drew, Jr., treasurer and assistant secretary. Carl F. Schnuck, chief engineer of the company, and Wm. M. Fraser, general manager of The Atwood Machine Co., Stonington, Conn., recently acquired by Farrel-Birmingham, were elected directors.

Franklin Farrel, Jr., is the grandson of Almon Farrel, and the son of Franklin Farrel, Sr., founders of Farrel Foundry & Machine Co., which was started in Ansonia in 1848. Mr. Farrel has been affiliated with the company in various capacities since 1903 and has served on the board since 1904. He will continue as a director and as chairman of the finance committee.

Mr. Cheney is also a direct descendant of the company's founders, being a great-grandson of Franklin Farrel, Sr. He has been a director of Farrel-Birmingham since 1931.

Farrel-Birmingham has also appointed Eric C. Gyllensvard, export sales manager, with office at 3700 Chrysler Bldg., New York, N. Y. Born in Sweden, he was educated in England and graduated from Cambridge University with a B.A. in mechanical engineering in 1927. Then Mr. Gyllensvard joined the Standard Oil Co. and spent the following eight years, first as petroleum engineer and later as sales engineer, with the company's subsidiaries abroad, working in Peru, Argentina, Brazil, India, Malay, Dutch East Indies, Philippines, and China. In 1937, Mr. Gyllensvard went to Sullivan Machinery Co., Michigan City, Ind., as export manager, with office in New York, and handled this company's extensive export operations for the last seven years. For two

terms he was president of the Machinery & Metals Export Association. Since our entry into the war Mr. Gyllensvard has also served in an advisory capacity on various government committees in Washington, handling export controls. In 1942 and 1943, he was on the Lend-Lease Foreign Trade Council and is now on the Foreign Economic Administration Advisory Committee. Besides he is a member of the Far Eastern Committee of the National Foreign Trade Council.

W. B. Pings, organic chemist from the experimental station of E. I. du Pont de Nemours & Co., at Wilmington, Del., recently joined Arthur D. Little, Inc., Cambridge, Mass., industrial research firm.

PACIFIC COAST

Los Angeles Rubber & Asbestos Co. is constructing a new storage building at 124 E. Third St., Los Angeles, Calif., to cover 32 by 40 feet and cost $5,300.

Kirkhill Rubber Co., will erect an addition to its factory at 5955 South St., Andrews Place, Los Angeles, Calif., to cost $1,900.

Furane Plastics & Chemicals Co., organized to make plastics and derivatives from furfural, has established its office and manufacturing plant at 5233 W. San Fernando Rd., Los Angeles 26, Calif. Initial production will be devoted to preparing high-strength cold setting adhesives for plastics and rubber products, and in the near future a new liquid, thermosetting casting resin will be made available. John Delmonte, technical director of Plastics Industries Technical Institute, will act as consultant to the company.

Reeves Rubber Co., San Clemente, Calif., plans construction of a brick and metal factory building to cover 35 by 40 feet and cost $10,000, and also a metal and stucco machine shop building to occupy 24 by 44 feet and cost $3,000.

Pittsburgh Plate Glass Co., Columbia Chemical Division, 632 Duquesne Way, Pittsburgh, Pa., has opened a new office at San Francisco, Calif., with I. G. Stewart, who has had 22 years' experience in the heavy chemical field, as manager. This new district sales office was opened to serve buyers of heavy chemicals on the West Coast and follows the acquisition of the Pacific Alkali Co., Bartlett, Calif. by the Columbia chemical division. The new office will be devoted only to the sale of heavy chemicals and was installed because of the increasing importance of West Coast activities in the nation's industrial economy.

South Gate Rebuilt Tire Co., will erect an addition to its tire shop at 8720 Long Beach Blvd., South Gate, Calif., to cover 1,800 square feet and be of reenforced brick construction.

Pacific Rubber & Tire Mfg. Co., 4901 E. 12th St., Oakland, Calif., has awarded a contract, at approximately $90,000, for construction of a two-story, reenforced concrete addition to its tire factory, to cover 175 by 50 feet.

A. M. Erskine has been appointed director of research and development for The Paraffine Cos., Inc., and associate, Plant Rubber & Asbestos Works, 557 Brannan St., San Francisco, Calif.

Oliver Tire & Rubber Co., Emeryville, Calif., will construct an addition to its plant. The new steel-frame structure, with brick walls, concrete floors, and steel windows, will be started about May 1. Plans also call for new machinery and equipment.

CANADA

New Mold and Tool Concern

Joseph Stokes Rubber Co., Ltd., Welland, Ont., has announced that an affiliated company, Thermoid Mould & Tool Works, Ltd., Welland, has been organized and began operations as of January 1 under Dominion charter. This company, housed in new modern quarters, will specialize in the design and manufacture of molds and tools for the rubber and plastics industry. The entire personnel and equipment of the company were transferred from the Joseph Stokes organization. Vernon Kessig, formerly supervisor of molds, tools, and dies of the Stokes company, has been appointed vice president and general manager of Thermoid Mould, and will be in charge of operations.

The new building contains approximately 5,000 square feet of floor space housing complete mold design and mold manufacturing facilities and is constructed of solid brick, one story high.

The organization of this new company represents the first unit in the proposed expansion of Joseph Stokes Rubber Co., Ltd., for present and postwar purposes. During 1945 it is planned to extend the manufacturing facilities of the Stokes company by additions to the east side of the present plant of about 25,000 square feet of floor space for housing new and modern rubber mixing machinery required for the mixing of synthetic rubber.

In addition plans are under way for the erection of an entirely separate unit comprising approximately 25,000 square feet of floor space for the manufacture of Thermoid brake lining, clutch facings, and friction materials for the Thermoid Co., which recently acquired control of Joseph Stokes Rubber Co.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., in a report on the first quarter of 1945 announced that all plants are running at capacity and that sales for civilian purposes have been extended to a smaller degree than anticipated because of a shortage of materials, particularly carbon black, and increased orders for war supplies. Such a condition, the report added, might prevail for several more months.

R. C. Berkinshaw resigned recently from the presidency of Polymer Corp., crown-owned synthetic rubber plant at Sarnia, Ont., to devote full attention to his duties as general manager of the Goodyear company. He took leave from Polymer at a time when production had been boosted to its highest point. February output totaled 8,770,000 pounds, or approximately 115% of the designed capacity of the plant. Tribute to Mr. Berkinshaw's efforts came at a dinner in his honor in Toronto on April 11 at which Earl W. Bennett, vice president, Dow Chemical of Canada, Ltd., praised cooperation between the Canadian Government and Canadian and American business interests in achieving rapidly a smoothly operating synthetic rubber program.

Dominion Rubber Co., Ltd., Montreal, P. Q., has appointed George Bergeron general sales manager of the mechanical and sundries' division. Mr. Bergeron formerly was director of the company's government sales at Ottawa and more recently general manager of the Ontario sales division.

Dominion Rubber recently acquired Irwin Dyestuff Corp., Ltd., Montreal. The Irwin company will act as sales outlet for various dyes and chemicals and will complement the activities of Naugatuck Chemical Division of Dominion Rubber. John Irwin, president for many years, remains in that capacity, and the management and personnel of the acquired company also remain unchanged.

The Dominion Bureau of Statistics, Ottawa, Ont., in its recent survey of the Canadian rubber industry in 1943 reveals that total production of all kinds of rubber goods had a gross value of $130,158,000, against $122,231,000 in 1942. This increase was wholly due to the marked advance in the output of miscellaneous rubber goods, including heels, soles, mechanical rubber goods, medical and druggists' supplies, etc., which more than offset the decrease in tires and tubes and the still greater decline in rubber footwear. Tires and tubes, the most important products, accounted for almost 50% of the total value of the year's output; footwear, over 11%; and other rubber goods, almost 39%. The value of tires and tubes fell from $66,831,055 in 1942 to $64,720,133 in 1943. That year footwear output totaled 11,984,908 pairs, value $14,495,794, against 14,768,965 pairs, value $19,858,565 in 1942; miscellaneous rubber goods produced in 1943 had a value of $50,941,853, against $35,541,782.

The Canadian rubber industry is practically confined to the provinces of Ontario and Quebec. Of 51 establishments producing rubber goods, 30 were in Ontario and 17 in Quebec; of the remaining four, one each was in Manitoba, Saskatchewan, Alberta, and British Columbia. The total capital invested in the industry was $73,550,768; the number of employes was 15,913, who received $25,342,508 in wages and salaries; the value of the materials used in 1943 came to $68,297,492. The share of the Ontario companies in the total capital was over 87%; they employed almost 72% of the workers and produced over 77% of the entire output.

From another source it is learned that while Canadian firms supplied more than 800,000 synthetic rubber tires for essential civilian uses in 1944, general civilian requirements remained largely unfilled. Canada used 10,000 tons of natural rubber in 1944 (in addition to synthetic rubber), against 60,000 tons in 1941.

Patents and Trade Marks

APPLICATION

United States

2,370,649. **In an Engine Starter, a Driving Connection Including Driving and Driven Abutments between Which Is an Elastic Spacer, and a Flexible Cable through Apertures in the Abutments.** J. W. FitzGerald, assignor to Briggs & Stratton Corp., both of Milwaukee, Wis.

2,370,680. **Laminated Paper and Rubber Hydrochloride Material for Making Containers.** G. A. Moore, New York, N. Y., assignor to Shellmar Products Co., Mount Vernon, O.

2,370,776. **In Riveting Apparatus, a Sleeve of Elastic Deformable Material.** B. G. Carlson, Erieside, assignor, by mesne assignments, to Jack & Heintz, Inc., Cleveland, both in O.

2,370,799. **Molded Plastic Fitting Adapted to Be Secured in a Tank Wall.** H. D. Kelley, Akron, O.

2,370,840. **Blind Rivet Hand Tool Including a Spindle on Which Is a Slidable Rubber Sleeve.** B. G. Carlson, Erieside, assignor, by mesne assignments, to Jack & Heintz, Inc., Cleveland, both in O.

2,370,870. **In a Safety Device for Use in Conjunction with Gas and Vapor Pressure Lines and Vessels, a Hollow Body Formed of Elastic Plastic Composition.** J. J. McKeague, Chicago, Ill.

2,370,889. **Cushioned Heel, Including an Outer Section of Comparatively Hard Rubber and an Inner Section of Comparatively Soft Cushioning Rubber.** W. E. Stout, Baltimore, Md.

2,370,905. **In the Fore Part of an Outsole, a Sole Blank Impregnated with a Waterproofing Substance.** S. L. Kleven, Augusta, Me.

2,370,913. **Oil Seal Including a Flexible Rubber Sealing Flange Portion, a Holding Portion of Molded Synthetic Resin and Fabric Impregnated with Synthetic Resin Interleaved with Fabric Impregnated with Rubber.** A. Procter, Newcastle-upon-Tyne, England.

2,370,951. **Heel Including a Base to Which Is Secured a Rubber Heel Body.** M. J. Goldberg, Pittsburgh, Pa.

2,370,963. **Flexible Wooden Sole for Shoes, Having Wooden Elements on One Face of a Waterproof, Vulcanizable, Flexible Plate.** M. L. Issaly, La Tronche, France.

2,371,047. **In Making a Die Fixture, the Use of Transparent Plastic Material.** H. G. Groehn, Beverly Hills, Calif., assignor to Castaloy Corp., Detroit, Mich.

2,371,204. **Welt Construction Including a Separate Sewing Rib of Synthetic Vinyl Resin Material.** W. C. Wright, Brookfield, assignor to Wright-Batchelder Corp., Boston, both in Mass.

2,371,206. **Tractor Mower with a Shock-Absorbing Self-Alining Collar of Flexible Resilient Material.** W. L. Zink, Plano, and B. T. Aasland and V. O. Hauswirth, both of Kankakee, assignors to Sears, Roebuck & Co., Chicago, all in Ill.

2,371,218. **Fluid Pressure Regulator Having a Metering Diaphragm of Elastic Material.** A. Boynton, San Antonio, Tex., deceased. S. S. Martin, executrix.

2,371,322. **Shank Stiffener Consisting of an Arched Wooden Strip Reenforced with a Resilient Layer of Hardened Plastic Material.** F. E. Toothaker, Swampscott, Mass., assignor to United Shoe Machinery Corp., Flemington, N. J.

2,371,404. **Submersible Container Including a Casing Divided into Interior Compartments Each of Which, except Those Destined for Holding Goods, Contains an Inflatable Ballonette.** I. R. J. Mumford, Welwyn, England.

2,371,432. **A Faucet with a Body, a Nozzle, and Porous Rubber Diffuser Rings between the Outlet End of the Body and the Interior of the Nozzle.** C. V. Di Pietro, Birmingham, Mich.

2,371,434. **Sand Blast Mechanism, Including a Sand Supply Hopper Connected with a Mixing Chamber by Means of a Rubber Tube.** A. H. Eppler, Milwaukee, Wis.

2,371,449. **Check Valve, Including Hollow Means of Pressure-Distortable Material and a Shoulder of Resilient Material.** J. D. Langdon, Brooklyn, N. Y.

2,371,523. **Wire Stranding Machine with a Runner Ring in Which Are Located Outer and Inner Metal Sleeves to Which Are Attached Rubber Bushes.** C. Jones, assignor to Hanson & Edwards, Ltd., both of Warrington, England.

2,371,633. **Bladder of Flexible Material in an Accumulator.** W. A. Lippincott, Evanston, assignor to Ideal Roller & Mfg. Co., Chicago, both in Ill.

2,371,769. **Inflatable Life Belt.** E. Mazza, New York, N. Y.

2,371,788. **Two-Piece, Channeled Cushion of Resilient Cellular Rubber.** P. Weeber, Chicago, Ill.

2,371,859. **Flexible Rubber Paint Mask.** D. A. Wallace, Detroit, assignor to Chrysler Corp., Highland Park, both in Mich.

2,371,945. **Holder for Hollow Electrodes, Including an Elastic Rubber Member Which Grips the Exterior of the Electrode and Prevents the Escape of Gas.** P. Barbeck, assignor to Oxygen Arc Equipment Co., Inc., both of New York, N. Y.

2,371,954. **Unit for Seat Base in Which Two Layers of Fabric or the Like, with a Flat Marginal Frame Interposed Therebetween, Are Bonded Together Along the Inner and Outer Sides of the Frame by a Vulcanized Rubber Compound.** M. M. Cunningham, South Bend, assignor to Mishawaka Rubber & Woolen Mfg. Co., Mishawaka, both in Ind.

2,371,965. **Respirator.** W. H. Lehmberg, Dudley, assignor to American Optical Co., Southbridge, both in Mass.

2,371,987. **In a Refrigerator, a Non-Metallic Breaker Strip between the Flanges of the Outer Casing and an Inner Liner.** M. J. Goulooze, Grand Rapids, assignor to Nash-Kelvinator Corp., Detroit, both in Mich.

2,371,991. **Lightweight Tube Adapted to Resist Inwardly Directed Forces.** W. G. Harding, Fairlawn, N. J., assignor to United States Rubber Co., New York, N. Y.

2,372,049. **Emergency Vehicle Wheel Adapted to Be Attached to a Regular Wheel and Including Wheel Segments, Each of Which Has a Tread Portion.** C. C. Bailey, Ashland, Ohio.

2,372,095. **A Packing Having a Supporting Annulus of Resin Impregnated Material and a Contacting Portion of a Yieldable Rubber Composition; the Two Parts Are United by a Bonding Material.** G. P. Leistensnider and H. G. Koch, both of Somerville, N. J., assignors to Johns-Manville Corp., New York, N. Y.

2,372,110. **Garment for Complete Protection Against Inclement Weather.** C. A. Noone, Chattanooga, Tenn.

2,372,133. **Foundation Garment Including a Lower Panel Portion Formed from Stiff Open-Mesh Thermoplastic Fabric and an Upper Panel Portion of a Woven Material Having Transversely Extending Elastic Threads.** K. K. Smythe, Evanston, Ill.

2,372,218. **Pneumatic Mattress.** F. Manson and J. J. Maskey, both of Dayton, O.

2,372,265. **Lady's Undergarment Having Two-Way Stretch Elastic Portions.** G. A. Fletcher, assignor to Munsingwear, Inc., both of Minneapolis, Minn.

2,372,302. **Deformable Tube Having a Wall of Compressible Elastic Material.** N. Swindin, assignor to Nordac, Ltd., both of London, England.

2,372,391. **Closure for a Container, Including a Tubular Portion of Pliable Plastic Material.** E. Pick, East Rockaway, N. Y., assignor to Permutit Co., New York, N. Y.

2,372,469. **Syringe Including a Liquid Reservoir Having a Resilient Flexible Tube of Liquid-Impervious Material.** H. H. Beasley, Portishead, and A. Weeks, Bristol, both in England.

2,372,560. **Valve Assembly.** E. Eger, Grosse Pointe Park, Mich., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.

Dominion of Canada

425,776. **A Sleeve for Housing a Valve Push Rod in an Internal Combustion Engine and Formed as a Flexible or Yieldable Component of Rubber, Fabric, or Metal.** E. P. Paxman, Colchester, Essex, England.

425,829. **Resilient Suspension for Vehicles.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of J. C. Hickman, Birmingham, Warwick, England.

425,830. **Wheel Suspension Joint Including a Rubber Element.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of J. C. Hickman, Birmingham, Warwick, England.

425,844. **Mineral Wool Product Having a Binder Including a Thermoplastic and a Thermosetting Material.** Johns-Manville Corp., New York, N. Y., assignee of J. H. Zettel, Alexandria, Ind., U. S. A.

425,872. **In a Hydraulic Force-Transmitting Capsule, Closely Spaced, Readily Bendable, but Non-Stretchable Lengths of Material Connecting a Force-Transmitting Member to the Fluid Retaining Means, and a Universally Flexible Material Sealing the Spaces between These Lengths to Confine the Fluid.** Toledo Scale Co., assignee of L. S. Williams, both of Toledo, O., U. S. A.

425,910. **Pump with a Conduit Having a Tube of Resilient, Compressible Material.** C. J. Huber, Downingtown, Pa., U. S. A.

425,912. **Rubber Cap for the Top Section of a Portable Climber.** E. H. Hurley, Emporium, Pa., U. S. A.

425,922. **In an Axle Driven Transmission Assembly, Including a Railway Car Axle Encircled by a Sleeve, Resilient Rubber Shock Absorbing Means between Axle and Sleeve.** G. F. Sheppard, Montreal, P. Q.

425,952. **In a Roller Construction, a Pair of Metal Shells Held in Operative Position by a Rubber Ring.** Crawford Door Co., Detroit, assignee of G. H. Hufferd, Grosse Point, and M. P. Graham, Detroit, both in Mich., U. S. A.

425,954. **Loop Picker of Vulcanized Rubberized Fabric Molded to the Desired Shape.** Dayton Rubber Mfg. Co., assignee of H. M. Bacon, both of Dayton, Ohio, U. S. A.

425,966. **Reenforced Sheet of Thermosetting Resin, Including a Layer of Resin Mechanically Bonded to a Steel Support.** General Motors Corp., Detroit, Mich., assignee of W. J. Doelker, Jr., and J. M. Hildabolt, both of Dayton, O., U. S. A.

425,978. **Laminated Safety Glass Having between Two Outer Sheets of Hard Transparent Material, an Interlayer of Transparent, Tough, Relatively Soft, Resilient Plastic Extending Beyond the Edges of at Least One of the Sheets to Form a Gasket, Which Is Sufficiently Thick, Soft, and Resilient to Provide by Itself a Watertight Seal When Clamped to a Supporting Structure.** Lockheed Aircraft Corp., Burbank, assignee of T. H. McClain, Altadena, Calif., U. S. A.

426,053. **A Light Polarizer, Including a Sheet of Material from the Class of the Transparent Vinyl Compounds; the Molecules of the Sheet Are Oriented.** E. H. Land, Cambridge, Mass., U.S.A.

426,188. **The Use of a Thermoplastic Adhesive, Including Isomerized Rubber, for Spraying the Pleated Skirts of Milk Bottle Caps.** American Seal-Kap Corp. of Delaware, Long Island City, assignee of H. G. Vore, Forest Hills, both in N. Y., U. S. A.

426,261. **Valve Including a Tapered Rotary Plug Having a Metal Core with Rubber Covering.** Mueller, Ltd., Sarnia, Ont., assignee of F. H. Mueller, Decatur, Ill., U. S. A.

United Kingdom

567,04[illegible]. **Use of Linear Super Polyamides in Treating Fibrous Materials.** Tootal Broadhurst Lee Co., Ltd., R. P. Foulds, W. H. Roscoe, and W. H. Watson.

567,293. **Self-Sealing Tanks for Gasoline and Other Liquids.** Fireproof Tanks, Ltd., and L. S. Daniels.

567,382. **Fuel Tanks.** Worcester Windshields & Casements, Ltd., and T. M. Deakin.

PROCESS

United States

2,370,623. **Articles from Thermosetting Resins.** A. E. Gibson, Jr., Springfield, Pa., assignor to Dentist's Supply Co., New York, N. Y.

2,370,721. **Extruding Fused Thermoplastic Compositions.** H. Dreyfus, London, England, assignor to Celanese Corp. of America, a corporation of Del.

2,370,958. **Repairing Ply Separations within Pneumatic Tire Casings.** E. Hellier, Louisville, Ky.

2,371,029. **Providing a Temporary Seal for Retaining Compressed Air in a Curing Bag.** A. H. Crandall, Grosse Pointe Woods, Mich., assignor to United States Rubber Co., New York, N. Y.

2,371,061. **Sectional Mold for Molding Plastic Articles.** S. Milano, assignor to Maryland Plastics, Inc., both of Federalsburg, Md.

2,371,075. **Making Fibers from a Solid Piece of Synthetic Polymerized Thermoplastic Material.** M. Spertus, Winnetka, assignor to Spertus Process Inc., Chicago, both in Ill.

2,371,313. **Resin and Fiber Product.** W. L. Rast and D. M. Musser, both of Pittsburgh, Pa., assignors to Glenn L. Martin Co., Baltimore, Md.

2,371,349. **Sheets of Plastic Material Having a Pearlescent Appearance.** E. G. Norton, Springfield, Mass., assignor to Monsanto Chemical Co., St. Louis, Mo.

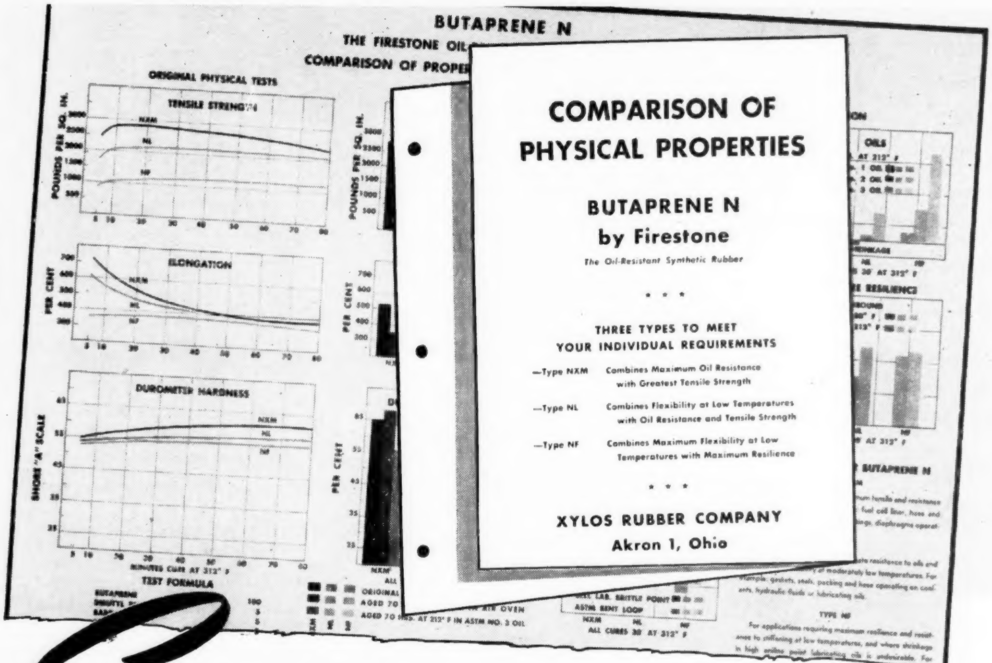
2,371,883. **Dipped Articles from Synthetic Rubber.** J. R. Gammeter, assignee of M. J. Vassel, both of Akron, O.

2,372,177. **Molded Cup-shaped Article From a Plasticizable Resinous Material.** B. F. Conner, West Hartford, assignor to Colt's Patent Fire Arms Mfg. Co., Hartford, both in Conn.

2,372,382. **Safety Inner Tube.** F. A. Krusemark, Chicago, Ill., assignor to Mansfield Tire & Rubber Co., Mansfield, O.

Dominion of Canada

425,923. **Tiling from a Thermoplastic Resinous Material.** C. E. Slaughter, New Canaan, Conn., U.S.A.



See for yourself—

WHAT BUTAPRENE N WILL DO FOR YOU

THE way these Butaprene-N synthetic rubbers perform under almost *impossible* conditions is little short of *remarkable.* So to guard against overstatement in our enthusiasm we have set down a few graphs and columns to show you in a cold, calculating, *scientific* way just what Butaprene-N will do for you. Tensile strength, elongation, cold resistance, resilience, resistance to oils and fuels — all are pictured in a sizable chart (11″ x 16″, in three colors) that shows at a glance the amazing physical properties of these *versatile* Firestone synthetic rubbers.

We'll gladly send you one of these charts — without obligation of course. And we'll do even more. If you wish, we'll have a member of the Butaprene technical staff *personally* go over your rubber problems with you. Simply write XYLOS RUBBER COMPANY, Akron 1, Ohio.

BUTAPRENE N

***by* Firestone**

THE SYNTHETIC RUBBER OF A THOUSAND POSTWAR USES

RESISTS: Oil - - Gasoline - - Heat - - Sub-Zero Cold - - Aging - - Abrasion

Copyright, 1945, The Firestone Tire & Rubber Co.

426,248. **Handling Elastic Filaments.** Filatex Corp., New York, N. Y., assignee of R. A. Gift, Jr., Trenton, N. J., both in the U.S.A.

United Kingdom

567,012. **Hollow Molded Articles from Polythene or Polythene Compositions.** G. W. Worrall and Imperial Chemical Industries, Ltd.

567,014. **Insulated Electric Conductors.** Henley's Telegraph Works, Ltd., and W. F. O. Pollett.

567,030. **Insulated Coils.** British Thomson-Houston Co., Ltd.

567,076. **Attaching Soles to Shoe Bottoms by Means of Rubbery Cement.** B. B. Chemical Co., Ltd. (B. B. Chemical Co.).

567,096. **Adhesive Bonding of Surfaces.** B. B. Chemical Co., Ltd., L. E. Puddefoot, and W. H. Swire.

567,236. **Plastic Products from Waste Rubber.** G. Frenkel.

567,358. **Sheets from Molten Film-Forming Materials.** Imperial Chemical Industries, Ltd.

567,360. **Welding of Ethylene Polymer Articles.** E. I. du Pont de Nemours & Co., Inc.

567,380. **Articles from Fibrous Material Which Is Bonded Together By An Adhesive Under Electrically Generated Heat.** B. Jablonsky.

CHEMICAL

United States

2,370,669. **Plastic Material from Keratin.** C. B. Joseph, St. Helens, assignor to Pilkington Brothers, Ltd., Liverpool, both in England.

2,370,689. **Copolymer of an Acyclic Terpene Having Three Double-Bonds per Molecule and a Material from the Group of the Acyclic Unsaturated Monobasic Fatty Acids of Between 12 and 22 Carbon Atoms and the Mono and Polyhydric Alcohol Esters Thereof.** A. L. Rummelsburg, assignor to Hercules Powder Co., both of Wilmington, Del.

2,370,809. **Removing Acetylenes from Gaseous Mixtures of Saturaed and Unsaturated Hydrocarbons with an Aqueous Solution of a Cuprous Salt.** C. E. Morrell, Roselle, and M. W. Swaney, Cranford, N. J., assignors to Standard Oil Development Co., a corporation of Del.

2,370,839. **Condensation Products from a Monomeric Organic Polyol, an Organic Compound Having at Least Six Carbon Atoms and a Labile Hydrogen Atom, and a Bi-functional Heteromonocyclic Urea Derivative.** W. J. Burke, Marshallton, and J. H. Werntz, assignors to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, both in Del.

2,370,849. **Acrylonitrile.** H. A. Dutcher, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,370,948. **Separation by Distillation of Styrene Without Any Appreciable Polymerization of the Styrene Because of Heat.** T. A. Gadwa, Mount Vernon, assignor to Lummus Co., New York, both in N. Y.

2,370,962. **Preparing a Fast Drying Film Forming Composition of Acid Number not Above 16.7, from a Polyhydric Alcohol of not More Than Two Hydroxyl Groups Partially Acylated with Fatty Oil Acid, and an Alpha Beta Unsaturated Dicarboxylic Acid.** L. P. Hubbuch, Springfield, and P. Robinson, Llanerch, both in Pa., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,370,987. **Preserving Rubber by Means of a Mixture of a Member of the Group of N.N'-Diphenyl-Benzidine and C-Substituted N,N'-Diphenyl-Benzidine, in Which the Substituents Consist of One or More Alkyl, Aralkyl, Aryl, Halogen, Alkoxy and Aralkoxy Groups and a Different Secondary Aromatic Amine Devoid of Strongly Negative Groups of the Character of —COOH, —SO_3H, and NO_2 Groups.** A. M. Neal and J. R. Vincent, assignors to E. I. du Pont de Nemours & Co., Inc., all of Wilmington, Del.

2,371,001. **Bandage Consisting of a Strip of Gauze Cloth Coated on Both Sides with a Composition of Unsaturated Solid Solution of a Polyvinyl Acetate in a Solvent Plasticizer.** R. Stone, Chicago, Ill.

2,371,052. **Regenerating a Cellulose Material in Shaped Form from a Solution in an Inert Solvent. Containing a Cellulose Derivative Having a Cellulose Nucleus; the Solution Has Dispersed Therein a High Molecular Weight Condensation Product of an Aromatic Amine with a Maleic Acid-Olefin Hydrocarbon Interpolymer.** J. E. Kirby, assigner to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,371,065. **Viscous Resinous Product from a Polyhydric Alcohol, a Member of the Group of Rosin and Hydrogenated Rosin, and a Member of the Group of Polyvinyl Esters of Saturated Organic Acids and Partial Polyvinyl Acetals.** P. O. Powers, Manheim Township, assignor to Armstrong Cork Co., Lancaster, both in Pa.

2,371,094. **Non-Fogging Coating Composition Consisting of Calcium-Base Titanium Dioxide Pigment, Titanium Dioxide Pigment, Zinc Oxide, Alkyd Resin Modified with a Drying Vegetable Oil, Drier Solution, Aromatic Hydrocarbon Solvent, Thiorea.** R. C. Wood, Philadelphia and H. R. Young, Aldan, both in Pa., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington Del.

2,371,098. **Plastic Mass Including a Rubber-Like product of the Polymerization of 1,3-Butadiene with Acrylonitrile Mixed with a Mixed Ester of the General Formula $R[XY]^n$ Where R Is the Residue of a Polyhydric Alcohol from the Group of Alkylene Glycols, Containing from 2-4 Carbon Atoms, Polyalkylene Glycols Containing 4-8 Carbon Atoms, and Glycerol, X Is the Residue of 3,6-Endomethylene-Δ-4,5-Tetrahydrophthalic Acid, Y Is an Alkyl Group Containing not More Than Eight Carbon Atoms, and n Is an Integer Equal to the Number of Hydroxyl Groups in the Polyhydric Alcohol of Which R Is the Residue.** A. R. Davis, Riverside, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,371,100. **1,3-Dicyanoguanidine.** D. W. Kaiser and J. T. Thurston, Riverside, Conn., assignors to American Cyanamid Co., New York, N. Y.

2,371,112. **Dithiobiruet of the Formula**

$$H_2N-\overset{\displaystyle S}{\overset{\|}{C}}-\overset{\displaystyle H}{\overset{|}{N}}-\overset{\displaystyle S}{\overset{\|}{C}}-NH_2$$

R. L. Sperry, Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,371,113. **Preparing Monothiobiuret by Heating Together a member of the Group of Guanyl Urea and Guanyl Urea Carbonate, and Hydrogen Sulphide Under Pressure in the Presence of an Inert Solvent.** R. L. Sperry Stamford, Conn., assignor to American Cyanamid Co., New York, N. Y.

2,371,131. **Plastic Composition, Including a Polyvinyl Acetal Resin Modified by Benzyl Ether of Diethylene Glycol Monopropionate.** E. R. Derby, Springfield, Mass., assignor to Monsanto Chemical Co., St. Louis, Mo.

2,371,134. **Composition Including a Polymer Made from a Monomeric Material Consisting Substantially of Vinyl Chloride, and an Alkyl Aryl Ketone in Which the Alkyl Group Contains 10 to 18 Carbon Atoms and the Aryl Group 9 to 12 Carbon Atoms.** T. L. Gresham, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,371,136. **Lignin Sulphonate Compounds.** C. Harmon, Wausau, Wis., assignor to Marathon Corp., a corporation of Wis.

2,371,235. **Light-Colored, Flexible Lac Compositions from the Reaction of a Dewaxed Bleached Shellac with a Polyhydric Alcohol in the Presence of a Polyester Produced by Heating Ethylene Glycol with the Resin Acid Resulting from the Diels-Alder Condensation of a Terpene with Maleic Anhydride.** W. H. Gardner, Bayside, and H. H. Bassford, Jr., Brooklyn, both in N. Y.

2,371,382. **Expanded Rubber Chloride Product.** G. R. Cuthbertson, Detroit, Mich., assignor to United States Rubber Co., New York, N. Y.

2,371,473. **Coating and Impregnating Composition Consisting of a Waxy Substance Modified by an Ester of a Pentaerythritol.** A. H. Sanford, Roselle, assignor to Hercules Powder Co., Wilmington, both in Del.

2,371,499. **Polymerizing a Vinyl Aromatic Compound in the Presence of Dicyclopentadiene, But in the Absence of Other Polymerizable Compounds.** E. C. Britton and W. J. Le Fevre, assignors to Dow Chemical Co., all of Midland, Mich.

2,371,500. **4.4'-Di-(2.3-Epoxy-Propoxy) Benzophenone.** E. C. Britton and H. R. Slagh, assignors to Dow Chemical Co., all of Midland, Mich.

2,371,530. **Production of 1,3-Butadiene by Dehydration of 1,3-Butylene Glycol.** A. E. Lorch, Tenafly, N. J., assignor to Air Reduction Co., Inc., New York, N. Y.

2,371,544. **Preserving Latex by Acidifying with Formaldehyde, Physically Removing Carbon Dioxide without Substantial Evaporation of Water from the Treated Latex Until the Carbon Dioxide Content Is not More Than 0.04 Milliequivalent of Co_2 per Gram of Latex Solids, and Then Adding Alkali to Raise the pH to at Least 7.5** C. E. Rhines, Glen Rock, N. J., assignor to United States Rubber Co., New York, N. Y.

2,371,560. **Concentrating Latex with the Aid of a Small Amount of an Alkali Metal Soap and the Acid Sulphuric Ester of Octodecyl-Lactate.** G. J. van der Bie, Buitenzorg, Java, Netherlands India; vested in the Alien Property Custodian.

2,371,577. **Methyl Vinyl Ketone.** W. J. Hale, Midland, Mich., and L. A. Underkofler, Ames, Iowa, assignors to National Agrol Co., Inc., Washington, D. C.

2,371,634. **Producing 1,3-Butadiene from 1,3-Butylene Glycol.** A. E. Lorch, Tenafly, N. J., assignor to Air Reduction Co., Inc., New York.

2,371,719. **Polymerizing Chloroprene in the Presence of Sulphur Dioxide.** H. W. Starkweather, Westover Hills, assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, both in Del.

2,371,722. **Passing an Aqueous Dispersion of a Vulcanizable Material Essentially of Chloroprene Polymer into a Path of Decreasing Cross-Section, Simultaneously Subjecting the Dispersion to Coagulation Conditions, Forcing the Mass Along This Path of Decreasing Cross-Section, Subjecting the Mass to Tearing Action, and Withdrawing the Aqueous Phase Therefrom.** F. W. Wanderer, Penns Grove, N. J., assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

2,371,736. **Composition Including a Cyclized Rubber and, as a Stabilizer, a Small Percentage of an Amide of a Polyalkylene Polyamine and a Carboxylic Acid of the Class of Abietic Acid, Hydroabietic Acid, and the Aliphatic Monocarboxylic Acids.** C. M. Carson, Cuyahoga Falls, assignor to Wingfoot Corp., Akron, both in O.

2,371,737. **Plastic Cyclized Rubber Composition Containing an Amide Formed from an Acid of the Class of the Natural Resin Acids and Hydrogenated Natural Resin Acids, and a Dialkanol Amine.** C. M. Carson, Cuyahoga Falls, assignor to Wingfoot Corp., Akron, both of O.

2,371,766. **Alpha, Alpha, Beta Trichloropropiophenone.** J. G. Lichty, Stow, assignor to Wingfoot Corp., Akron, both in O.

2,371,768. **Heat-Resistant Composition Including Cellulose Ester Having a Butyryl Content of at least 25% and 0.1-1% of an Alcohol Amine.** C. J. Malm and M. Salo, assignors to Eastman Kodak Co., all of Rochester, N. Y.

2,371,794. **Cyclopentene Produced from Cyclopentadiene.** J. H. Boyd, Jr., Hudson Township, O., assignor to Phillips Petroleum Co., a corporation of Del.

2,371,817. **Improved Method of Producing Diolefins.** F. E. Frey, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,371,848. **Production of Butadiene from Ethylene.** W. A. Schulze, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,371,849. **Polymerization of an Aliphatic Conjugated Diolefin.** W. A. Schulze and W. N. Axe, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., a corporation of Del.

2,371,850. **Catalytic Dehydrogenation of Low-Boiling Aliphatic Olefins Having at Least Four Carbon Atoms per Molecule to Produce the Corresponding Diolefins.** W. A. Schulze and J. C. Hillyer, both of Bartlesville, Okla., assignors to Phillips Petroleum Co., a corporation of Del.

2,371,868. **Mixing Particles of Polyvinyl Chloride with a Plasticizer at a Temperature Permitting the Formation of a Pulverulent to Granular Mass of Non-Adherent Particles, and Then Heating the Resultant Mixture Without Further Mixing at a Temperature Sufficiently Elevated to Cause Sintering of the Particles Without Complete Coalescence so as to Form an Article of Uniform Porosity.** H. Berg and M. Doriat, both of Burghausen, Germany; vested in the Alien Property Custodian.

2,371,869. **Polymer Produced by Heating Adipic Diamide with a Compound of the General Formula X—R—X, Where R Is an Aliphatic Hydrocarbon, and X Is an Element from the Group of Chlorine, Bromine, and Iodine.** H. Bergk, Krefeld, Germany, vested in the Alien Property Custodian.

2,371,870. **Adhesive Composition Including a Resinous Reaction Product of a Mixture of Cashew Nut Shell Oil and Another Phenol with Solubilized Depolymerized Vulcanized Rubber, and a Hardening Agent for the Resin; All of These Ingredients Are in Solution.** C. F. Brown, Nutley and G. E. Hulse, Jr., Passaic, both in N. J., assignors to United States Rubber Co., New York, N. Y.

2,371,899. **An Aqueous Emulsion Including a Solution of Chlorinated Rubber and a Glycol Ester.** J. G. Little, assignor to Hercules Powder Co., both of Wilmington, Del.

2,371,915. **Resinous Composition from Precipitated Gelatinous Hydrous Metal Oxide Particles Containing Adsorbed Water and a Wet Phenol-Aldehyde Resin.** C. Rector, Brooklyn, N. Y., and C. F. Schrimpe, Woodbridge, N. J., assignors to Bakelite Corp., a corporation of N. J.

2,371,943. **Resin Obtained from a Polyvinyl Acetal and a Secondary Diarylamine.** P. R. Austin, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

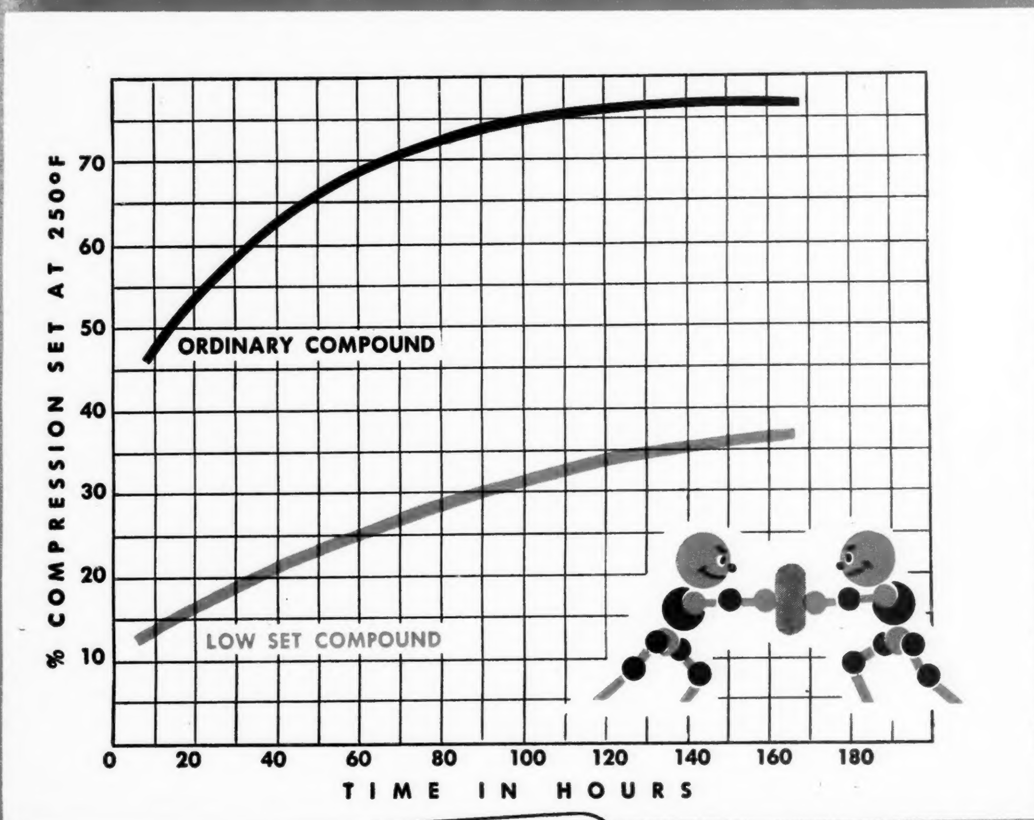
2,371,957. **Plastic Composition Including a Polyvinyl Acetal Resin and, as Modifying Agent, Ethyl Laurate.** E. R. Derby, Springfield, Mass., assignor to Monsanto Chemical Co., St. Louis, Mo.

2,371,990. **Polyester Which on Hydrolysis Yields a Saturated Aliphatic Monoaldehyde and a Dicarboxylic Acid of the Formula:**

$$HOOC-R-\overset{\displaystyle O}{\overset{\|}{C}}-OH$$

in Which the Carboxyl Groups Are the Sole Reactive Groups and in Which R Contains at Least Three Contiguous Atoms. W. E. Hanford, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

HIGH TEMPERATURE COMPRESSION SET YOUR PROBLEM?...



	Time, Hours	Ordinary Compound 7706-3	Low Set Compound 7706-4
Perbunan		100.0	100.0
Zinc Oxide		5.0	5.0
Stearic Acid		1.0	1.0
Semi-reinforcing furnace Black		50.0	50.0
Benzothiazyl disulfide**		1.0	—
Sulfur		1.5	—
Tetramethyl thiuram disulfide		—	3.0
Trimethyl dihydroquinoline type antioxidant*		2.0	2.0
Physical Properties Cured 60 minutes at 287°F.			
Tensile psi		2890	2580
Elongation at break percent		460	520
Modulus at 300% Elongation psi		1950	1360
Shore		60	55
Extension Set ASTM D412-41 percent		3.0	5.0
Compression Set ASTM D395-40T Method B 30% Constant Deflection Cured 75 min. at 287°F.			
Testing Temperature 158°F.	8	8.7	8.6
	22	13.3	8.6
	46	21.6	11.9
	70	21.3	12.9
	120	24.0	14.0
	168	25.8	14.2
Testing Temperatures 250°F.	8	46.3	12.9
	22	64.0	15.4
	46	68.4	19.9
	70	68.9	26.4
	120	71.8	36.3
	168	76.6	36.8

*Santoflex B, Agerite Resin D
**MBTS, Altax, Thiofide

Write Stanco Distributors, Inc., 26 Broadway, New York 4, N. Y. First Central Tower, 106 So. Main St., Akron 8, Ohio. 75 East Wacker Drive, Chicago 1, Illinois. West Coast Representatives—H. M. Royal Co., 4814 Loma Vista Avenue, Los Angeles 11, California. Warehouse stocks in New Jersey, California and Louisiana.

Compression Set Constant Deflection A.S.T.M. Method B

Compound No. 7706-4 was specially developed for services where high temperatures were a considerable factor. The contrast with an ordinary compound clearly illustrates the remarkable results possible with Perbunan when the proper recipe is used.

Perbunan can be compounded for any need. Consult your Perbunan Compounding and Processing Manual. Phone us, or drop a line if you haven't received one.

PERBUNAN
REG. U. S. PAT. OFF.

THE SYNTHETIC RUBBER THAT RESISTS OIL. COLD. HEAT AND TIME

Copyright 1945 by Stanco Distributors, Inc.

2,371,997. **Resinous Composition from Urea, an Aldehyde, and the Salt from Equimolecular Proportions of Diamine and Dibasic Carboxylic Acid, Reacted in the Presence of Water.** F. W. Hoover and G. T. Vaala, assignors to E. I. du Pont de Nemours & Co., Inc., all of Wilmington, Del.

2,372,001. **Obtaining from a Normally Solid and Essentially Saturated Ethylene Polymer an Unsaturated Hydrocarbon Product Which Ranges in Appearance and Texture from Waxes to Greases and Is of Lower Molecular Weight Than the Ethylene Polymer.** R. M. Joyce, Jr., Marshallton, assignor to E. I. du Pont de Nemours & Co., Inc., Wilmington, both of Del.

2,372,031. **Manufacture of Acrolein by the Gaseous Phase Catalytic Condensation of Aqueous Formaldehyde with Acetaldehyde.** H. M. Stanley, Tadworth, and W. A. Smart, Epsom, both in England, assignors to Distillers Co., Ltd., Edinburgh, Scotland.

2,372,048. **Laminated Structure of Layers of Glass Fiber Fabric, in Which the Fibers Are Coated with an Oil Modified Phenolic Resin, and the Whole Is Bonded by Thermosetting Phenolic Resin.** R. W. Auxier, Forest Hills, assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, both in Pa.

2,372,074. **Laminations of Magnetic Material Bonded by a Heat-Treated Insulating Composition Composed of Polyvinyl Acetal, Polyvinyl Acetate as Plasticizer, and a Heat-Hardening Phenol Aldehyde-Type Resinous Condensate.** J. G. Ford, Forest Hills, assignor to Westinghouse Electric & Mfg Co., East Pittsburgh, both in Pa.

2,372,090. **Higher Molecular Weight Polycarboxylic Acids.** E. C. Kirkpatrick, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,372,108. **Thixotropic Dispersions of Polymeric Esters from Corresponding Monomeric Esters from the Group of Methyl Acrylate, Ethyl, Arcylate, Methyl Methacrylate, Ethyl Methacrylate.** H. T. Neher, Bristol, and W. R. Conn, Melrose Park, assignors to Röhm & Haas Co., Philadelphia, all in Pa.

2,372,153. **Light, Tough Molded Member for Use in Refrigerators and Consisting of Cellulose Acetobutyrate and a Substance from the Group of Vanillin and Coumarin Distributed in the Cellulose Acetobutyrate.** O. H. Yoxsimer, Mansfield, O., assignor to Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

2,372,160. **Sulphurized 3-Sulpholanyl Oleate.** R. C. Morris and J. L. Van Winkle, both of Berkeley, assignors to Shell Development Co., San Francisco, both in Calif.

2,372,161. **Sulphurized N-(3-Sulpholanyl) Oleylamide.** R. C. Morris and J. L. Van Winkle, both of Berkeley, assignors to Shell Development Co., San Francisco, both in Calif.

2,372,176. **Separating Butylene-2 from a Normally Gaseous Hydrocarbon Mixture Containing It and Other Less Soluble Olefins and Paraffins.** C. A. Coghlan, Beacon, N. Y., and K. J. Korpi, Pasadena, Calif., assignors to Texas Co., New York, N. Y.

2,372,178. **Finely Divided Water-Soluble Urea-Formaldehyde Resin with Which Is Mixed a Water Insoluble Hydroxy-Stearic Acid Metallic Soap.** J. F. Corwin and W. R. Moffitt, both of Bainbridge, assignors to Borden Co., New York, both in N. Y.

2,372,221. **Acetylating 2,3-Butylene Glycol with the Impure Acetic Acid Obtained from the Pyrolytic Decomposition of 2,3-Butylene Glycol Diacetate to Butadiene.** S. A. Morell, Peoria, Ill., assignor to the United States of America, as represented by C. R. Wickard, Secretary of Agriculture and his successors in office.

2,372,235. **To Prevent Deterioration of Rubber, the Incorporation of a Small Proportion of a Secondary Aromatic Amine Antioxidant and a Small Proportion of a Member of the Group of Terpene Mercaptans and Metal Terpene Mercaptides in Which the Metal Is of Group II-B of the Periodic Table.** J. R. Vincent, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,372,237. **Depolymerizing Dicyclopentadiene to Cyclopentadiene.** A. L. Ward, Bala-Cynwyd, Pa., assignor to United Gas Improvement Co., a corporation of Pa.

2,372,299. **Composition Including a Copolymer of 1,3-Butadiene and Acrylonitrile and a Neutral Oil Resulting from the Treatment with a Sodium Hydroxide Solution of a Resin Formed by the Reaction of Sulphur Dioxide and 2-Butene.** R. D. Snow, Bartlesville, Okla., assignor to Phillips Petroleum Co., a corporation of Del.

2,372,365. **New Chemical Product Including an Aryl Polyglycol Sulphonate.** M. De Groote, University City, and B. Keiser, Webster Groves, both in Mo., assignors to Petrolite Corp., Ltd., Wilmington, Del.

2,372,366. **New Chemical Product Including an Oxyalkylated Derivative of a Sub-rubbery Polymeric Sulphur-Converted Polyhydric Alcohol Ester.** M. De Groote, University City, and B. Keiser, Webster Groves, both in Mo., assignors to Petrolite Corp., Ltd., Wilmington, Del.

2,372,527. **Purification of Ring Substituted Methyl Styrene Contained in a Light Oil Ring Substituted Methyl Styrene Fraction Contaminated with Methyl Phenyl Acetylene.** F. J. Soday, Swarthmore, Pa., assignor to United Gas Improvement Co., a coproration of Pa.

2,372,528. **Purifying Styrene Contained in a Light Oil Styrene Fraction Contaminated with Phenyl Acetylene.** F. J. Soday, Swarthmore, Pa., assignor to United Gas Improvement Co., a corporation of Pa.

2,372,540. **Separation of Acetaldehyde from a Mixture Containing Acetaldehyde and Aldol.** F. R. Balcar, Stamford, Conn., assignor to Air Reduction Co., Inc., New York, N. Y.

2,372,562. **Process in Which Alpha-Chloro-Styrene Is Reacted with Sulphuric Acid.** W. S. Emerson, Van Buren Township, O., assignor to Monsanto Chemical Co., a corporation of Del.

2,372,565. **Preparing High Viscosity Cellulose Propionate.** R. E. Fothergill, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

2,372,577. **Coating Material from a Mixture of a Resin Which Melts at an Elevated Temperature and an Oil Having Drying Properties, Heated to Form a Solution, and Mixing Urea with the Solution.** E. Hirsch, New York, N. Y.

2,372,584. **Reclaiming Process in Which Ground Vulcanized Rubber Scrap, in Which Is Incorporated a Small Amount of a Di(Hydroxyaryl) Sulphide, Is Heated at from 300 to About 420° F.** W. G. Kirby and L. E. Steinle, Naugatuck, Conn., assignors to United States Rubber Co., New York, N. Y.

2,372,598. **Ethylene Sulphide-Guanidine Complexes.** L. P. Moore, New York, N. Y., and W. P. Ericks, Stamford, Conn., assignors to American Cyanamid Co., New York, N. Y.

2,372,602. **Producing Pentaerythritol by Condensing Acetaldehyde with Formaldehyde in the Presence of an Alkaline Condensing Agent.** G. R. Owens, Dayton, O., assignor to Monsanto Chemical Co., a corporation of Del.

2,372,615. **Producing Mono-Beta-Ethers of Styrene Glycol by Reacting Styrene Oxide with an Alcohol.** C. A. Thomas, Mad River Road, and C. A. Hochwalt, Rahn Road, both in O., assignors to Monsanto Chemical Co., a corporation of Del.

2,372,630. **Shaped Article from a High Molecular Weight Synthetic Linear Polyamide.** A. F. Smith, assignor to E. I. du Pont de Nemours & Co., Inc., both of Wilmington, Del.

Dominion of Canada

425,813. **Composition Including a Synthetic Linear Polyamide and an Ester Derived by Esterification of a Polycarboxylic Acid with a Monohydric Ether Alcohol.** Canadian Industries, Ltd., Montreal, P. Q., assignee of G. T. Vaala, Wilmington, Del., U.S.A.

425,816. **Improving the Physical Characteristics of Polymeric Ethylene Compositions by Intimately Admixing Polyvinyl Isobutyl Ether.** Canadian Industries, Ltd., Montreal, P. Q., assignee of C. L. Child and B. J. Habgood, both of Blackley, Manchester, England.

425,828. **Friable, Solid Polymer Derived from Styrene.** Dow Chemical Co., assignee of E. C. Britton and W. J. LeFevre, all of Midland, Mich., U.S.A., and H. B. Marshall, Toronto, Ont.

425,852. **Sealing Composition Including Rubber, a Treated Rosin, and a Finely Divided Low Colloidal Clay.** Minnesota Mining & Mfg. Co., assignee of G. S. Merrill and G. P. Hollingsworth, all of St. Paul, Minn., U.S.A.

425,853. **Hard, Dense Resinous Fibrous Product.** Patent & Licensing Corp., New York, N. Y., assignee of R. H. Cubberley, Ridgewood, N. J., both in the U.S.A.

425,942. **Composition Including a Fibre-Forming Linear Polyamide and a Phenol-Formaldehyde Resin.** Canadian Industries, Ltd., Montreal, P. Q., assignee of G. T. Vaala, Wilmington, Del., U.S.A.

425,995. **Production of Monomethylol Butanone by Reacting Dimethylol Butanone with Methyl Ethyl Ketone in the Presence of Barium Hydroxide.** Shell Development Co., San Francisco, Calif., U.S.A., assignee of H. W. Huyser, Amsterdam, The Netherlands.

426,014. **Composition Including Rubber, Sulphur, and a Synthetic Polymer Prepared from Mixed Isoolefins and Diolefins.** Standard Oil Development Co., Linden, assignee of N. S. Beekley, Jr., Westfield, both in N. J., and W. J. Sparks, Alexandria, Va., both in the U.S.A.

426,021. **Increasing the Tensile Strength of a Vulcanized, Deposited Latex Article by Soaking in a Bath of an Aliphatic Mono- or Di-Hydric Alcohol for at Least Half an Hour.** United States Rubber Co., New York, N. Y., assignee of R. O. Alexander, Pawtucket, R. I., both in the U.S.A.

426,071. **Polymerizing Monomeric Styrene Solution in the Presence of Formaldehyde Reactant to Produce a Tough, Polystyrene Resin Characterized by High Viscosity in Solution.** Allied Chemical & Dye Corp., assignee of Barrett Co. (by its trustees on dissolution), both of New York, N. Y., assignee of A. R. Krotzer, Philadelphia, Pa., W. A. King, Memphis, Tenn., and J. H. Kleiner, Atlantic City, N. J., all in the U.S.A.

426,072. **A Tough, Substantially Colorless Polymerized Para-Methyl Styrene Resin Soluble in Aromatic Solvents, Substantially Insoluble in Alcohol, and Having an Absolute Viscosity of at Least 300 Centipoises for a 25% solution in Toluene at 25° C.** Allied Chemical & Dye Corp., assignee of Barrett Co. (by its trustees on dissolution), both of New York, N. Y., assignee of A. R. Krotzer, Philadelphia, Pa., W. A. King, Memphis, Tenn., and J. H. Kleiner, Atlantic City, N. J., all in the U.S.A.

426,125. **Preparing Pure Pentaerythrite from a Raw Crystallizate Obtained by Condensation of Acetaldehyde and Formaldehyde.** Lonza Elektrizitatswerke und Chemische Fabriken A.G. (Gampel), Basle, assignee of G. Trumpler, Visp, both in Switzerland.

426,259. **Providing a Protective Covering on Iron by Applying to Its Surface an Aqueous Solution of a Hydrophilic Resin-Forming Material Convertible to a Hydrophobic Water-Insoluble Solid Resin State.** Minnesota Mining & Mfg. Co., assignee of B. S. Cross and H. B. Keene, all of St. Paul, Minn., U.S.A.

426,273. **Gas-Expanded Closed Cell Rubber.** Rubatex Products Inc., New York, N. Y., assignor of R. C. Bascom, Port Clinton, O., both in the U.S.A.

United Kingdom

566,980. **Treatment of Granular Polyvinyl Acetate with Sebacic Acid.** E. I. du Pont de Nemours & Co., Inc.

567,063. **Branched Chain Guanamine-Aldehyde Condensation Products.** W. W. Triggs (American Cyanamid Co.).

567,098. **Cementing of Molded Methyl Methacrylate Resins.** Imperial Chemical Industries, Ltd.

567,128. **Thermosetting Resin and Manufacture Therefrom.** E. H. G. Sargent.

567,130. **Polyvinyl Acetal Composition.** Wingfoot Corp.

567,151. **Treating Aqueous Dispersions of Rubber.** United States Rubber Co.

567,242. **Coating Compositions.** E. I. du Pont de Nemours & Co., Inc.

567,297. **Plastic Compositions.** S. H. Colton.

567,364. **Stabilization of Naphthol-Rubber Products.** E. I. du Pont de Nemours & Co., Inc., and J. Harmon.

567,422. **Nitrourea.** E. I. du Pont de Nemours & Co., Inc., and C. P. Spaeth.

567,438. **Cyclic Ketones.** Roche Products Ltd., F. Bergel, J. W. Haworth, and A. W. D'A. Avison.

567,464. **Stablizing Vinyl Esters.** Imperial Chemical Industries, Ltd. (E. I. du Pont de Nemours & Co., Inc.).

567,496. **Cyclized Rubber Compositions.** E. I. du Pont de Nemours & Co., Inc., and W. H. Charch.

567,498. **Coating Compositions.** E. I. du Pont de Nemours & Co., Inc.

567,523. **Coating Compositions.** Imperial Chemical Industries, Ltd.

MACHINERY

United States

2,370,622. **Mechanical Closing Device for Injection Molding Machines.** H. Gastrow, Zerbst in Anhalt, Germany; vetsed in the Alien Property Custodian.

2,370,655. **Tread Vulcanizing Mold.** E. A. Glynn, assignor to Super Mold Corp. of California, both of Lodi, Calif.

2,370,827. **Apparatus for Forming Thermoplastic Material.** P. P. Weichbrodt, Buffalo, and F. L. Williamson, Kenmore, assignors to Bell Aircraft Corp., Buffalo both in N. Y.

2,370,883. **Apparatus for Dielectrically Heating Materials for Molding by a High Frequency Field.** G. Smith, Concord, assignor to Reed-Prentice Corp., Worcester, both in Mass.

2,370,917. **Device to Apply Adhesive to a Premolded Counter.** F. Ricks and C. M. Bagshaw, both of Leicester, England, assignors to United Shoe Machinery Corp., Flemington, N. J.

2,370,952. **Rubber Treating Machine.** W. A. Gordon, Shelton, assignor to Farrel-Birmingham Co., Inc., Ansonia, both in Conn.

2,370,955. **Rubber Dusting Apparatus.** A. J. Guthrie, St. Albans, W. Va.

2,370,972. **Tire Retreader.** H. T. Kraft, assignor to General Tire & Rubber Co., both of Akron, O.

2,371,709. **Device for Continuously Molding Plastic Material Under Pressure.** A. E. Rineer, Dayton, O.

2,371,799. **Apparatus to Apply Adhesive to Tape.** E. H. Brown, assignor to McInerney Spring & Wire Co., both of Grand Rapids, Mich.

2,372,162. **Apparatus for Forming Insulated Cables in Which Insulation Is Extruded About a Wire Core.** A. O. Ryan, River Edge, assignor

SUN RUBBER PROCESSING OIL . . .

Eliminates Bloom, Softens Vulcanizate in Moulding, Extruding, and Milling of Mechanical Goods

When a processing oil has the right compatibility, there are three big sources of saving: 1. More oil can be used in compounding. 2. Better quality of stock is obtained without blooming or checking. 3. Milling and other processing-steps can be speeded-up. Here is how an eastern manufacturer of mechanical rubber goods discovered these savings when he changed to one of Sun's Circo Light Rubber Processing Oils.

Milling, extruding, and moulding processes were being slowed-up because stocks were difficult to handle. In addition, a nationally known processing oil that was being used caused surface-bloom.

After changing to Circo Light, there was a definite absence of oil-bloom, and the Circo Light Rubber Processing Oil produced effective softening of the vulcanizate. Furthermore, after more than a year's test, the company estimated they were saving as much as 10% in natural rubber and Buna S content of certain products.

In all types of processing, with either natural, Buna S, GR-S or other types of synthetic rubber, Sun's processing oils are writing a consistent record of compatibility and savings. Now, when production must be kept up, or in the days to come, when costs must be squeezed down, rely on Sun oils for dependable results. Call the Sun Engineer in your territory. Or write direct to . . .

SUN OIL COMPANY • *Philadelphia 3, Pa.*

Sponsors of the Sunoco News Voice of the Air — Lowell Thomas

SUNOCO **SUN INDUSTRIAL PRODUCTS**

OILS FOR AMERICAN INDUSTRY

to Federal Telephone & Radio Corp., Newark, both in N. J.
2,372,216. **Tire Casing Recap Mold.** D. M. MacMillan, Macon, Ga.

Dominion of Canada

425,780. **Form for Liquid Latex Deposited Articles.** A. N. Spanel, New York, N. Y., U.S.A.
425,812. **Apparatus for Preparing Tubing of Cast Synthetic Resin.** Canadian Industries, Ltd., Montreal, P. Q., assignee of R. T. Fields, Arlington, N. J., U.S.A.
425,869. **Apparatus for the Continuous Concentration of Rubber Latex.** Sylvania Industrial Corp., Fredericksburg, Va., assignee of M. H. Wallach, Briarcliff Manor, and G. S. Hills, New Rochelle, both in N. Y., executors of the estate of R. N. Wallach, now deceased, in his life time of Briarcliff, and Justin Zender, Frederickburg, co-inventor with R. N. Wallach.
425,988. **Machine for Forming Articles from Organic Plastic Materials, Including an Extruder.** Plax Corp., assignee of W. H. Kopitke, both of Hartford, Conn., U.S.A.
426,020. **Mixing Mechanism for Processing Latex Foam Without Coagulation Thereof.** United States Rubber Co., New York, N. Y., assignee of E. H. Clark, Mishawaka, Ind., both in the U.S.A.
426,180. **Vulcanizer.** A. D. Slatkin, Toronto, Ont.
426,280. **Apparatus for Treating Sponge Rubber Articles.** United States Rubber Co., New York, N. Y., assignee of E. A. Luxemberger, G. W. Blair, J. F. Schott, and E. H. Clark, all of Mishawaka, Ind., both in the U.S.A.

United Kingdom

567,076. **Apparatus for Producing a Tempering Atmosphere for Treating Soles Prior to Attachment with Rubbery Cement.** B. B. Chemical Co., Ltd., (B. B. Chemical Co.).
567,375. **Injection Molding Machines.** E. Shipton and W. N. Hill.
567,423. **Device to Rubberize Fabric.** Firestone Tire & Rubber Co., Ltd.

UNCLASSIFIED

United States

2,370,625. **Antiskid Heel Attachment for Heels with Rubber Lifts.** J. M. Hearton, Williamsport, Pa.
2,370,663. **For Hydraulic Fluid-Presure Systems, Transmission Fluids Having Relatively Complete Inertness to Metallic and Rubber Parts and Including Diethyl Cyanamide and Castor Oil.** W. H. Hill, Mount Lebanon, Pa., assignor, by mesne assignments, to Koppers Co., Inc., a corporation of Del.
2,370,766. **Hose Clamp.** J. E. Austin, North Hollywood, Calif.
2,370,790. **Means for Preserving Tires.** P. Glasser, New York, N. Y.
2,370,831. **Eraser Mounting for Pencils.** G. R. Averill, Birmingham, Mich.
2,370,945. **Device to Test Rubber Gloves.** J. J. Fields, North Canton, O.
2,371,015. **Tread Block Core for Endless Tracks, Etc.** E. L. Allen, Cleveland Heights, and H. B. Muster, Avon Lake, assignors to R. I. Schonitzer, Shaker Heights, all in O.
2,371,071. **Tread Block Core for Endless Tracks, Etc.** R. I. Schonitzer, Shaker Heights, O.
2,371,185. **Cable Connector.** H. Purat, assignor to Progressive Welder Co., both of Detroit, Mich.
2,371,363. **Hose Connector.** W. G. L. Smith, Los Angeles, Calif.
2,371,508. **Apparatus for Treating the Gas Permeability of a Molded Specimen.** H. W. Dietert, Detroit, Mich.
2,371,776. **Airtight Closure for an Inflated Suit.** W. T. Van Orman, assignor to Wingfoot Corp., both of Akron, O.
2,371,805. **Conduit Coupling Means.** C. G. Cooper, Yuma, Ariz.
2,371,818. **Apparatus for Removing a Thin Walled Article from a Form.** J. R. Gammeter, Akron, O.
2,371,891. **Tire Valve.** G. Hoffmann, Nuremberg, Germany; vested in the Alien Property Custodian.
2,371,971. **Hose Connector.** D. W. Main and R. G. Cox, assignors to Michigan Patents Corp., all of Jackson, Mich.
2,372,434. **Apparatus for Measuring Tension in a Stretched Cable.** G. N. Krouse, Columbus, O.

Dominion of Canada

425,809. **Combined Penetrating and Rubber Lubricating Composition.** Canadian Industries, Ltd., Montreal, P. Q., assignee of K. E. Walker, Elmhurst, Del., U.S.A.
425,904. **Wheel Balancing Machine.** E. N. Forster, Colusa, Calif., U.S.A.

United Kingdom

567,036. **Connections for Electric Cables.** Standard Telephones & Cables, Ltd., and H. Bullas.
567,320. **Fluid-Pressure Indicators for Pneumatic Tires and Other Inflated Bodies.** W. Turner.
567,518. **Metal Foil.** Wingfoot Corp.

TRADE MARKS

United States

411,039. Representation of three men with the words: **"The House of All Sizes"** across them. Raincoats and other articles of clothing. Gushner Bros., doing business as Boyd's, Philadelphia, Pa.
411,051. **Laird Schober & Co.** Footwear. Laird Schober & Co., Inc., Haverhill, Mass.
411,065. **Lanora.** Footwear. Lansburgh & Bros., Washington, D. C.
411,087. **Randseal.** Baby pants. Rand Rubber Co., Brooklyn, N. Y.
411,132. **Merlon.** Synthetic resins in solution of dispersion form. Monsanto Chemical Co., St. Louis, Mo.
411,155. **Saf-T-Bra.** Breast shield. Wilson Products, Inc., Reading, Pa.
411,228. **Thistle.** Adhesives. Arvey Corp., Chicago, Ill.
411,321. The words: **"Gates Seal"** with a line under the first four letters and a line above the last three. Hose, belting, etc. Gates Rubber Co., Denver, Colo.
411,328. **Gadabouts.** Footwear. Harzfeld's, Inc., Kansas City, Mo.
411,337. **Estrellita the Girdle of the Starlets.** Girdles and garter belts. O. Erteszek, doing business as Olga Co., Los Angeles, Calif.
411,390. **Thin Man.** Footwear. Adler Sons Shoe Corp., New York, N. Y.
411,391. **Wide Guys.** Footwear. Adler Sons Shoe Corp., New York, N. Y.
411,394. **Flotofoam.** Raw or partly prepared materials. United States Rubber Co., New York, N. Y.
411,407. **Randseal.** Waterproof sheeting. Rand Rubber Co., Brooklyn, N. Y.
411,408. **Shindigs.** Footwear. Tober-Saifer Shoe Co., St. Louis, Mo.
411,413. **Hickory.** Foundation garments. A. Stein & Co., Chicago, Ill.
411,444. **Stic-Klip.** Adhesives. O. C. Eckel, doing business as Stic-Klip Mfg. Co., Cambridge, Mass.
411,445. **Resloom.** Synthetic resins in solution. Monsanto Chemical Co., St. Louis, Mo.
411,469. **Capri Garter Belt Styled for Today.** Garter belts. O. Erteszek, Los Angeles, Calif.
411,483. **Frank Sbicca Pump Magic Originals.** Footwear. Sbicca, Inc., Philadelphia, Pa.

Rims Approved and Branded by The Tire & Rim Association, Inc.

Rim Size	March, 1945
15" & 16" D.C. Passenger	
16x4.00E	107,122
16x4.50E	50,882
15x5.00E	2,477
16x5.00E	1,967
16x5.00F	10,274
15x5.50F	23,423
16x5.50F	12,761
16x6.00F	6,636
16x4.00E Hump	6,639
17" & Over Passenger	
18x2.15B	9,122
Flat Base Truck	
17x4.33R	3,347
20x4.33R	21,668
15x5.00S	16,016
18x5.00S	2,521
20x5.00S	420,879
24x5.00S	404
20x6.00T	73.418
22x6.00T	13,458
24x6.00T	179
20x7.00T	4,051
20x7.33V	77,782
22x7.33V	7,955
24x7.33V	16,883
20x8.37V	415
24x8.37V	1,208
Semi D.C. Truck	
16x4.50E	15,412
16x5.50F	3,651
Tractor & Implement	
12x3.00D	8,545
15x3.00D	36,275
16x3.00D	4,564
18x3.00D	3,538
19x3.00D	7,413
21x3.00D	2,401
36x4.50E	296
18x5.50F	2,564
20x5.50F	2,520
36x6.00S	1,558
24x8.00T	1,805
32x8.00T	227
36x8.00T	418
W7-24	2,684
W8-24	18,550
W8-32	2,150
W8-36	805
W10-26	430
W10-28	2,655
W11-26	1,192
DW8-24	1,251
DW8-38	981
DW9-38	6,774
DW10-38	6,473
DW11-38	356
DW12-26	4,773
DW12-30	6,851
DW12-34	2,917
Cast	
24x15.00	35
Total	1,041,551

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co.	Com.	$0.25	Mar. 31	Mar. 16
American Hard Rubber Co.	Pfd.	1.75 q.	Mar. 31	Mar. 16
American Wringer Co., Inc.	Com.	0.15 irreg.	Apr. 2	Mar. 15
Crown Cork International	"A"	0.30 accum.	Apr. 2	Mar. 16
Crown Cork & Seal Co., Inc.	Com.	0.25	Apr. 10	Mar. 29
Dewey & Almy Chemical Co.	Com.	0.25 q.	Mar. 15	Feb. 28
Dewey & Almy Chemical Co.	B	0.25 q.	Mar. 15	Feb. 28
Electric Storage Battery Co.	Com.	0.50	Mar. 31	Mar. 12
Faultless Rubber Co.	Com.	0.25	Apr. 1	Mar. 15
Firestone Tire & Rubber Co.	Com.	0.50	Apr. 20	Apr. 5
General Electric Co.	Com.	0.40 q. incr.	Apr. 25	Mar. 9
General Tire & Rubber Co.	Pfd.	1.125 q.	Mar. 31	Mar. 21
B. F. Goodrich Co.	Com.	0.50 q.	Mar. 21	Mar. 9
B. F. Goodrich Co.	Pfd.	1.25 q.	Mar. 21	Mar. 19
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	0.62 q.	Apr. 2	Mar. 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	Pfd.	0.625 q.	Apr. 2	Mar. 15
Hercules Powder Co.	Com.	0.50	Mar. 24	Mar. 13
Jenkins Bros.	Non Vot.	0.25	Mar. 29	Mar. 16
Jenkins Bros.	Fdrs.	1.00	Mar. 29	Mar. 16
Jenkins Bros.	Pfd.	1.75 q.	Mar. 29	Mar. 16
I. B. Kleinert Rubber Co.	Com.	0.25 irreg.	Mar. 12	Mar. 1
Mansfield Tire & Rubber Co.	Com.	0.25 q.	Mar. 20	Mar. 10
Mansfield Tire & Rubber Co.	Pfd.	0.30 q.	Apr. 2	Mar. 15
Minnesota Mining & Mfg. Co.	Com.	0.35	Mar. 10	Mar. 2
Mohawk Rubber Co.	Com.	0.50	Apr. 14	Mar. 24
Pharis Tire & Rubber Co.	Com.	0.15	Apr. 10	Mar. 27
Rome Cable Corp.	Com.	0.15 q.	Mar. 29	Mar. 8
Rome Cable Corp.	Com.	0.25 extra	Mar. 29	Mar. 8
Seiberling Rubber Co.	Pfd.	0.63 q.	Apr. 1	Mar. 15
Seiberling Rubber Co.	Pfd. A	1.25 q.	Apr. 1	Mar. 15

In virtually every major industry you will find Timken Tapered Roller Bearings first choice of engineers.

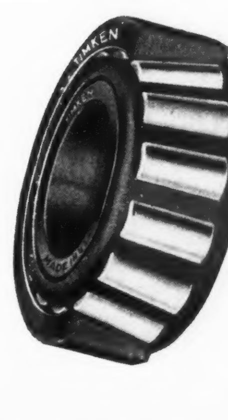
In gigantic steel mills — machine tools — motor cars and motor trucks — in paper making and in road building equipment — in countless types of war material, Timken Bearings are delivering amazing performance.

Such widespread acceptance is based simply and solely on the unexcelled service that Timken Bearings have given for nearly 50 years.

Our many years of research — our wide practical knowledge — plus Timken Alloy Steels and our unequalled manufacturing resources, are the basic reasons for the unfailing dependability of Timken Roller Bearings.

See that the trade-mark "TIMKEN" is on every bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio.

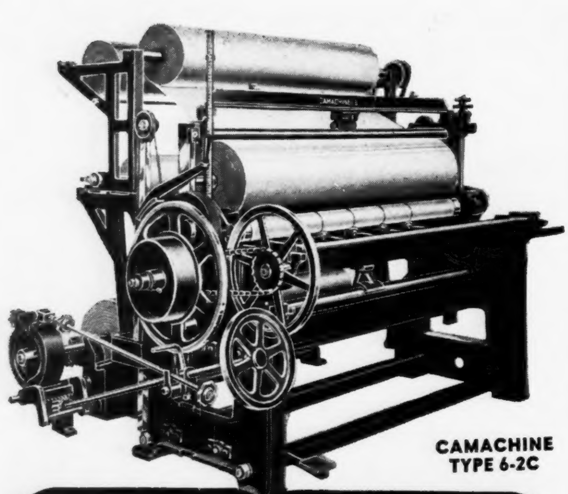
"All there is in Bearings"



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

Timken Bearings, Timken Alloy Steels and Tubing and Timken Removable Rock Bits

COPYRIGHT 1945 BY THE TIMKEN ROLLER BEARING CO.



CAMACHINE
TYPE 6-2C

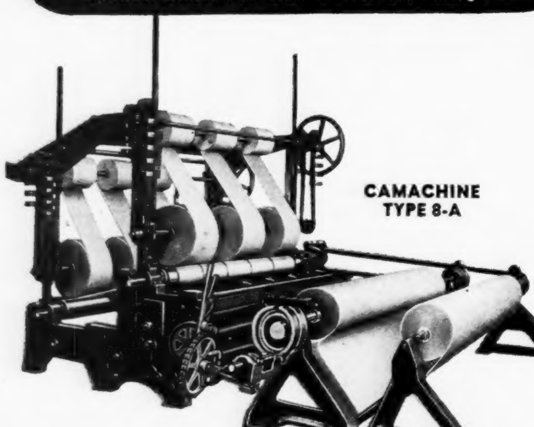
CAMACHINES

for slitting fabric, rubber, paper, etc.

In the rubber industry there is an ever-increasing demand for rolls of rubber, rubberized fabrics and even paper. Camachines are designed and built to take large parent rolls of these materials, slit the web into narrow widths and wind the slit strips into rolls; all in one operation. In some instances it is necessary to remove the liner cloth and rewind it; at the same time inserting new liner cloths in the rewound rolls. All of these things can be done simultaneously with the Camachine of the proper type. The converted rolls are, furthermore, accurate as to width and compactly wound, for more efficient subsequent processing.

Write for interesting illustrated literature.

CAMERON MACHINE COMPANY
61 Poplar St., Brooklyn 2, N. Y.
Midwest Office: 111 West Monroe St., Chicago 3



CAMACHINE
TYPE 8-A

EUROPE

GREAT BRITAIN

For Greater Postwar Production and Prosperity

News of preparations by government and industry to insure increased trade, particularly export trade, after the war, continue to be featured in the press.

An Export Guarantee Bill, by which government's liability under export guarantee is increased to £200,000,000 has just passed a third reading in the House of Commons.

The Board of Trade is completing the regional organization to supervise the changeover to peacetime production and to bring about what redistribution of industry is now or may be in the future, within its control.

British rubber manufacturing firms, in their own interests as well as in an effort to cooperate in the government's design for postwar trade expansion and maximum employment, are already preparing for resumption of the production of peacetime goods which had to be abandoned or was severely restricted by emergency regulations. A concrete example of how government and industry may be expected to work together in the national interests is provided by the latest undertaking of Dunlop Rubber Co., Ltd.

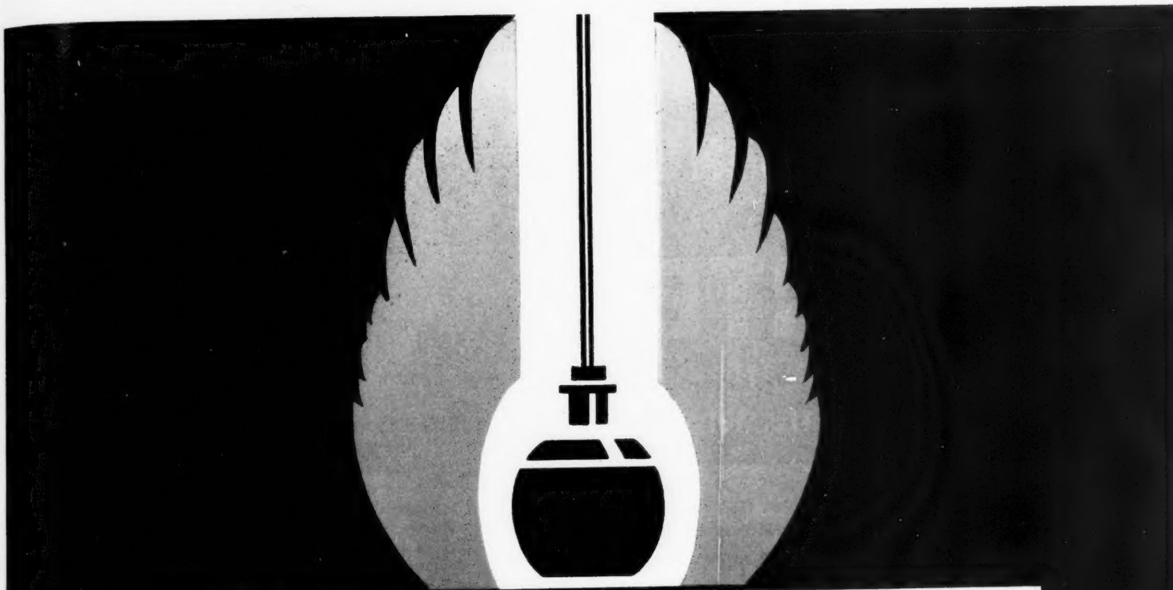
Dunlop's postwar plans call for considerable additional factory space. As the Ministry of Aircraft Production No. 1 factory at Speke, near Liverpool, was due to be vacated soon, it was allocated on lease to Dunlop. Thus on the one hand government has taken a step to insure future employment and prosperity of Merseyside. Dunlop, on its part, preferred to lease a large modern factory instead of attempting to extend existing factories while in full operation. This factory is considered admirably suited to meet not only the requirements of latest production techniques, but also the considerable, accumulated demand which the firm expects—once the war is over—for its various products, particularly of the heavy industrial type. The Speke factory will continue to be held by the present occupants until July, when Dunlop will move in.

The acquisition by Peradin, Ltd., rubber manufacturer at Bath, of an abandoned mill at Freshford for postwar expansion purposes, may be considered a similar move, although necessarily on a different scale. The old mill in question was formerly used for wool-making, and Peradin plans to convert it for the production of tennis balls and colored rubber flooring. It is expected to give employment to about 250 workers, chiefly of the vicinity. Peradin, incidentally, has increased its nominal capital of £30,000 to £75,000 by the addition of £45,000 in 20,000 7½% cumulative redeemable preferential shares of £1 each and 250,000 ordinary shares of 2s. each.

Quite in line with other peacetime plans is the projected formation of two companies to deal with the financial needs of industry in the postwar period. These companies are to be set up on the

FOR HIGH RESILIENCE USE PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 130)



The C. P. Hall Co.
CHEMICAL MANUFACTURERS

ACCELERATORS
PLASTICIZERS
ANTIOXIDANTS

A Complete Line of Approved Compounding Materials

AKRON, OHIO • LOS ANGELES, CALIF. • CHICAGO, ILL.

Eliminate

BRASS PLATING

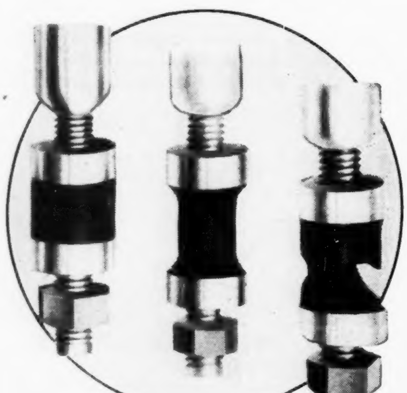
use

REANITE

TO BOND RUBBER AND SYNTHETIC RUBBER TO METALS

With Reanite you can forget slow, costly brass plating in rubber-to-metal adhesion. Merely substitute two quick-drying coats of Reanite cement for the brass plating operation and proceed as usual. Follow your standard practice for curing time, pressure and temperature. *Reanite bonds will prove stronger than the rubber itself!*

Reanite will bond natural rubber or Buna S with practically integral adhesion to steel, aluminum, magnesium, copper, in fact almost any metal.



THE U. S. STONEWARE CO.
Dept. RA, Box 350 • Akron 9, Ohio

Please send me full information, without obligation, on the Reanite Process for bonding rubber-to-metal.

Name________
Title________
Company________
Address________

U. S. STONEWARE

Since 1865 • Akron, Ohio

initiative of the business communities of the country, Sir John Anderson, Chancellor of the Exchequer, announced in Parliament recently. The first, to be named the Finance Corp. of Industry, Ltd., would have a capital of £25,000,000 and borrowing powers of four times that amount so that total resources would be £125,000,000. The company would provide temporary or long-period finance for industrial businesses to aid their quick rehabilitation and development in the national interest. The second and smaller company, the Commercial & Industrial Finance Corp., would have a capital of £15,000,000 and borrowing power of twice that. This company would provide medium and long-term capital for small and medium sized concerns.

Finally, revived activity in the advertising field is noted. Owing to war conditions many firms discontinued advertising their particular brands of goods, but now the feeling seems to be that the time is ripe to call special brands to the attention of the public again. In Scotland, Ralph W. Steward & Co., Ltd., Dumfermline, footwear manufacturer, has started an advertising campaign, featuring its trade marks, Union Jack, Canmore, and Sunbeam.

Notes on British Companies and Personnel

Wildt & Co., Ltd., has bought the mold making and engineering business of J. T. Jarratt & Co., both of Leicester, and will continue it under the old name, with all the present employes. S. B. Jarratt will manage the business.

Redfern's Rubber Works reported profit for 1944 of £90,782, against £70,237 in 1943. After various deductions for war damage insurance, deferred repairs, and tax provision, net profits of £18,210 remained, as compared with £19,344 after similar disbursements in 1943. As in the latter year, total dividends of 12% were distributed on the ordinary shares.

The president-elect of the Federation of British Industries for the ensuing year is Sir Clive Latham Baillieu, K.B.E., C.M.G. Sir Clive acted as director-general of the British Purchasing Commission in the United States from 1941-1943. In the latter year he returned to England, but visited the United States again recently when he represented the F.B.I. at the International Business Conference. Sir Clive is a director of several companies, including Dunlop Rubber Co., Ltd.

P. S. King has been appointed sales manager of the Goodyear South Africa Co. and has by now left England to take up his duties in South Africa. Mr. King, who has been connected with the Goodyear concern for 25 years, was assistant sales manager of Goodyear Tire & Rubber Co., Ltd., Wolverhampton, when the war broke out. Since April 1942, he had been deputy director in the tire directorate, Ministry of Supply.

GERMANY

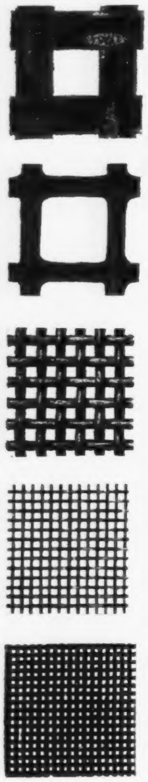
Plastics for Medicinal Purposes

As Germany had made a good start on the investigation and production of plastics even before the war, it may be taken for granted that there have been important developments in this field during the war years, although little of any great value seems to have been permitted to leak out. Such technical publications as come to hand occasionally are not too enlightening, although bits of interesting information can occasionally be gleaned from them.

A German medical publication in 1942 described various applications of plastics in the manufacture of pharmaceutical and medicinal preparations. The chief materials used are given as polymerizates of ethylene oxide and certain ethylene derivatives which form the base for such varied products as suppositories, salves, sutures, tubes, and bandages. In suppositories, polyethyleneoxide is used as a base instead of cocoa butter and is said to have the advantage, as compared with the usual fats employed for the purposes, of dissolving readily in the intestinal secretions so that incorporated medical preparations are resorbed without difficulty. These suppositories are also said to be absolutely stable under heat and tropical conditions and to keep indefinitely. The polyethyleneoxide base salves, unlike those with vaseline, form emulsions with water and, while being neutral to them, have excellent solvent properties for numerous water-insoluble medicaments customarily employed in skin therapy.

Surgical tubes and sutures of polyvinyl alcohol, either unresorbable or resorbable in varying degrees, may have bactericides incorporated and have apparently proved highly satisfactory.


RUBBER and PLASTICS MOLDING
with
EEMCO
PRESSES
EEMCO
Made in sizes from 12" x 12" Laboratory Press up to desired sizes, EEMCO hydraulic presses comprise a line of especially built and designed presses for rubber and plastics molding. No matter what your molding requirements may be, you are invited to consult with EEMCO for your needs.
★ ★ ★
MILLS • HYDRAULIC PRESSES • TUBERS
EXTRUDERS • STRAINERS • WASHERS
CRACKERS • CALENDERS • REFINERS
★ ★ ★
Sales Representatives
MIDWEST
HERRON & MEYER OF CHICAGO
38 South Dearborn St.
CHICAGO 3, ILL.
EASTERN
H. E. STONE SUPPLY CO.
OAKLYN, N. J.
OHIO
DUGAN & CAMPBELL
907 Akron Savings & Loan Bldg.
AKRON, OHIO
EEMCO Erie Engine & Mfg. Co.
953 EAST 12th ST., ERIE, PENNA.



LUDLOW SAYLOR

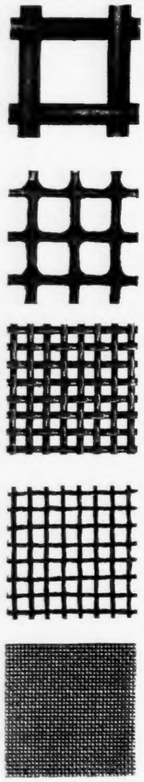
Precision Wire Cloths and screens for Rubber Strainers, sifters, filters and similar process equipments.

We have been specialists for many years in the making of precision wire cloths, wire screens and woven wire products.

We apply our same precision principles in fabricating wire cloths into finished industrial units, for production or processing equipments or for permanent parts of countless industrial products.

We invite your inquiries for wire cloths of all commercial metals or alloys or weaves, in continuous lengths or cut to size, or processed to meet your individual requirements.

We will follow your specifications and blue-prints exactly as your production engineers have prepared them—or we will submit suggestions for your approval.



"Perfect" alloys and metals	"Perfect" Wire Cloth weaves	"Perfect" Wire Cloth processing	"Perfect" Wire Cloth products
Super-Loy	Arch-Crimp	Bending	Baskets
Steel	Coiled	Binding	Circles
Galvanized	Double-Crimp	Brazing	Cones
Tinned	Double-Fill	Calendering	Crates
Stainless Steel	Dutch	Clinching	Cylinders
Nickel-Chromium alloys	Filter	Cutting	Discs
Aluminum	Flat-Top	Dipping	Forms
Brass	Herringbone-Twill	Dishing	Leaves
Bronze Commercial Phosphor	Intermediate-Crimp	Flanging	Lengths
Copper	Rek-Tang	Flattening	Panels
Monel Metal	Selvage-Edge	Forming	Pieces
Nickel	Straight-Warp	Framing	Racks
Any special alloys available in rod or wire form	Stranded	Galvanizing	Ribbons
	Sta-Tru	Painting	Rolls
	Triple-Warp	Shearing	Sections
	Twilled	Slitting	Segments
	Twisted-Fill	Trimming	Spacers
	Twisted-Warp	Arc-Welding	Strips
		Gas-Welding	Template shapes
		Spot-Welding	Trays

The LUDLOW-SAYLOR WIRE COMPANY
Newstead Avenue and Wabash Railroad
ST. LOUIS 10, MO.

Aqueous suspensions of polyvinyl alcohol or its water-soluble partial esters, acetals, or esters, mixed with Congo red, serve as substitutes for agar-agar as culture medium for bacteria. Polymerizates, mixtures of polymerizates or copolymerizates of the various ethers of vinyl alcohol serve as adhesive for plasters, bandages, etc., and have good storage qualities, it is claimed. Finally there are so-called dry ointments which include active medicaments besides polymerization products of ethylene derivatives and dry up to adherent, elastic films which can also be used over joints without impairing their mobility.

Welding Plastics

Directions issued by the V.D.I. (Association of German Engineers) in 1942 for welding synthetics emphasize that only non-hardenable (thermoplastic) synthetics which can be easily and repeatedly deformed by heat are suitable for welding. The fusion point of polyvinylchloride unmixed with softeners or fillers is about 200° F., and this is the temperature which must be maintained as closely as possible during welding. Usually special welding apparatus is required. If welding strips are employed, then the same kind of seams will serve as in steel and metal welding. If the welding seam is accessible on both sides, welding should always be carried out on both sides. The welding strip may consist of the basic material or such material containing a softener. The method of procedure is similar to that followed in welding metals by gas-smelting, but in this case union takes place in a doughy state. The strength of the union does not depend on the form of seam made, but on the thoroughness of the welding process itself and the use of as little extra material as possible in making the seam.

Uses of Low-Polymer Polyvinyl Chloride

The low-polymer polyvinyl chloride considered has molecular weight ranging from 15,000 to 30,000, or about one quarter that of the usual high-polymer P.C.U. The material is brittle and cannot be used for forming objects, but is easily soluble in suitable solvents so that it lends itself for impregnation and lacquering purposes. The manufacturing steps include the production by emulsion polymerization of a milk-like fluid that is subjected to a spraying process which reduces the material to grains of a size between 10 and 100μ.

The low-polymer products intended for lacquers are marketed under the names Vinoflex PCU 3, PCU 8, and PCU 20; the numbers indicate the relative degree of polymerization. Unlike Vinoflex N, which is a chlorinated polyvinyl lacquer material soluble in many solvents, the other Vinoflex types just mentioned are soluble in only certain of the solvents usually employed for lacquers. The type of film obtainable with these materials can be very widely varied by appropriate selection of ingredients for admixture. Very useful films for protecting the surfaces of metals are said to have been obtained, especially when adhesion is improved by proper priming. It is claimed that light-metal castings impregnated with low-polymer polyvinyl chloride to provide pressure-resistant sealing have given satisfactory service. For this purpose PCU 3 in at least two solvents of different volatility was used, the process was carried out in a vacuum of 10 mm. Hg. to insure proper penetration of the solvent.

FRANCE

Rehabilitation Programs

Although the demands of the war effort sharply limit the amount of assistance that can be given France in her efforts toward rehabilitation, the United States has been sending over increasing amounts of raw materials, goods, and equipment not only for military purposes, but for civilian use as well. From the day of invasion to the end of December, 1944, the United States sent civilian supplies for France, totaling 175,000 tons, value $30,000,000. During January, 1945, total shipments of non-military supplies came to 46,000 tons and included 8,525 tons of sulphur and 890 tons of asbestos.

Authorized non-military purchases in the United States will include 2,500 tons of carbon black for use in synthetic rubber, 18,000 tons of gas solvent, 5,000 tons of calcium carbide, 3,000 tons of asbestos, 36,000 tons of cotton, and 7,000 tons of synthetic rubber.

SHELL DUTREX 6

Plasticizer and Extender for GR—S

Chemically and physically Controlled

SHELL

Direct inquiries to:

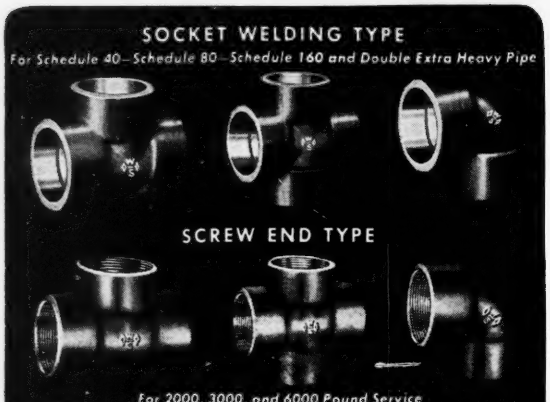
SHELL OIL COMPANY, INC.

50 WEST 50th ST., NEW YORK 20, N. Y.
(East of Rockies Territory)

100 BUSH ST., SAN FRANCISCO 6, CALIF.
(Pacific Coast Territory and Western Canada)

SHELL OIL COMPANY, LTD., 25 ADELAIDE ST., EAST
TORONTO, CANADA
(Eastern Canada)

For Strength, Safety and Extra Service on High Pressure Pipe Lines



Above are illustrated but a few of the W-S Line of Forged Steel Fittings

The Mark of Proven Quality

W-S Forged Steel Fittings

For construction and maintenance work in power plants, oil fields, refineries, chemical plants, ship construction, air conditioning and refrigeration where uninterrupted high pressure, high temperature service is vital, Watson-Stillman Forged Steel Fittings are used for their greater strength and safety, exceptionally long-time service, due to strong, trouble-free joints. Machined from solid drop forgings. The Double-Diamond trade mark is your guarantee of *Proven Quality*.

SOCKET WELDING FITTINGS

Deeper sockets eliminate necessity of cutting pipe to exact lengths, speed up and simplify installation, furnish support for the pipe and provide self-alignment. No special fixtures are needed for lining up and holding joints. PROVEN WELDABILITY. Sizes... 1/8" through 4" I.P.S.

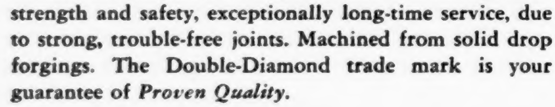
FORGED STEEL SCREWED FITTINGS

Long threads, accurately cut, perfectly aligned, for quick, easy installation. Uniform wall thickness throughout assures a higher factor of safety. Long low bands extend beyond last thread to insure extra strength and better wrench grip. Sizes... 1/8" through 4" I.P.S.

Send For These Bulletins

A-3—on Forged Steel Fittings. **A-4**—Globe and Check Valves. **710-A**—Hydraulic Jacks in independent pump and attached pump types. **240-A**—Hydraulic Hand Pumps. **A-6**—Shears, hand and hydraulic types.

Sold Through Leading Distributors 7745



WATSON-STILLMAN

Distributor Products Division—Roselle, N. J.

Designers and Manufacturers of Forged Steel Fittings, Valves, Wire Rope Shears, Hand Pumps, Jacks, Pipe Benders and Hydraulic Equipment

It is stated that the United States Army Service Forces plan to utilize the factories and manpower of France to produce $1,000,000,000 worth of goods including up to 200,000 heavy-duty tires which have already been contracted for. Among the other articles which will probably be made in France may be mentioned waterproof covers. Batteries and tires, it should be added, are on the critical urgency list of the Allied industries so that French factories equipped to manufacture these items will probably be used to the fullest practicable extent for military production. A portion of the heavy-duty tires will also be made in Belgian tire factories.

One of the great problems the Allies are facing in the liberated areas is the speedy rehabilitation of industries, as much to facilitate the provision of military and civilian needs locally, as to assist the economies of the peoples concerned, and in this transportation is a prime factor. In the liberated areas, therefore, tires figures prominently among those manufactures receiving first attention; but for tires there must be rubber.

Wherever the Nazis set foot, they took away stocks of rubber, tires, trucks, and automobiles. In 1939, France imported about 65,000 tons of rubber, of which more than half went into tires. In 1943 total rubber consumption was under 7,000 tons, and after the liberation of France it was found that stocks of rubber on hand did not amount to more than 800 tons. Transportation facilities were badly impaired; no private cars were running, and for most civilians the chief means of locomotion were bicycles. The Government of France took over the Renault automobile factory, and it is said there are great plans to make of this concern one of the biggest and most modern automobile factories in the world, plans which automatically commit the French rubber industry to a comparable expansion. But all this is in the future. Meanwhile it is the task of the Allies to provide tires for existing trucks, additional trucks equipped with tires, and supplies of synthetic rubber for the manufacture of more tires as well as other essential rubber goods. All this the Allies are doing. Thanks to GR-S furnished by America, certain factories in France, including Dunlop and Hutchinson, are beginning to turn out tires and other essential rubber goods, chiefly for military purposes to begin with. Later there will be a considerable backlog of civilian requirements of rubber goods to fill.

No special difficulty is looked for by the French factories in working synthetic tires, since, if not the two concerns mentioned, others have had years of experience during the German occupation in making tires for the Nazis from synthetic rubber supplied by them. In fact it is understood that American experts are now in France studying German methods of handling their synthetic rubber. It is to be noted that though the advisability of establishing factories in France for the production of synthetic rubber is said to have occupied the minds of German experts from time to time, no such factory appears to have been actually established. Evidently the Germans feared the French might learn too much about synthetic rubber. Reports about synthetic rubber factories in France, therefore, seem to refer to works where such rubber was converted into goods, and not to plants producing the material itself.

An English source states that a sizable black market in automobile tires exists in France. It is suggested that the tires, which sell for something like $600 to $2,000 each, may be part of a reserve of stocks originally manufactured for the Germans during the occupation, but never declared.

It is understood that the French railways are studying designs for tires to be used on long-distance trains when the war is over. This report brings to mind the combination steel-flanged and rubber tires used before the war on the vehicles known as Michelines. These so-called Michelines were intended chiefly to provide connections with railway lines to less accessible places and ran on rails as well as the road.

ITALY

In Italy the Allies have taken over existing rubber factories, and are reopening or adapting them for the production of necessary war goods. Works have been opened near the battle lines where tires can be repaired or retreaded with as little delay as possible. Rubber goods for civilians is taking the form chiefly of rubber soles and heels milled from scrap from damaged tires.

Italian manufacture of rubber goods on an increased scale commenced again on March 1, when five Italian tire and rubber factories went into operation after having been reconstructed by the Allied Commission.

Editor's Book Table

BOOK REVIEWS

"Developments and Status of Carbon Black." Isaac Drogin. United Carbon Co., Inc., Charleston, W. Va. Paper, loose-leaf, 8½ by 11 inches. 126 pages.

As mentioned in the preface by Oscar Nelson, president of United Carbon Co., there have been noteworthy and far-reaching changes in the carbon black industry in the last few years with regard to processes of manufacture, development of new types of carbon black, and the uses of carbon black in both natural and synthetic rubber; and it is timely, therefore, to present the important facts on carbon black and their significance. Developments since February, 1945, when this preface was written, have further increased the value of the information on the present-day carbon black industry and its products.

This well-done publication, which is amply illustrated with photographs and charts, first presents the prewar and war status of carbon blacks. Tables from Bureau of Mines statistics show production, shipments, prices, and inventories of carbon blacks from 1887 through 1943, and production and shipments for 1944 and 1945 are forecast. The new types of blacks developed for use with synthetic rubber are reviewed in another section, and the demand and supply position and the postwar status of carbon black are discussed with reference to the published statements of leading rubber industry executives on future rubber consumption.

Of special interest is the section on review of manufacturing processes, which describes in detail the channel process and the furnace processes, both combustion and thermal. Extensive technical data are given in sections on processing and reenforcement of blacks in GR-S and smoked sheet. The many physical, chemical tests used in examining carbon black are described as well as the actual rubber laboratory evaluation methods. Under classification and description of carbon blacks, the trade marked grades of all companies are identified according to the WPB system, and the test characteristics of representative United Carbon and other company blacks are listed. There is in addition an index of rubber grade blacks, a glossary, an index of patents, and a list and map showing the location of carbon black plants in the U. S.

"Here Comes Tomorrow." A. W. Zelomek. Ziff-Davis Publishing Co., 350 Fifth Ave., New York, N. Y. 1944. Cloth, 5¼ by 8¼ inches, 138 pages. Price $2.

The author, a foremost American economist, is president of the International Statistical Bureau, Inc., and has been since February, 1941, by Presidential appointment on the staff of the

RUBBER IS STILL CRITICAL

There are many reasons today for not ruining rubber by scorching. With the use of modern accelerators, it is particularly important to keep an accurate check on temperature. For this purpose we suggest the routine use of Cambridge Surface Pyrometers; the Roll Model for still or moving rolls, the Mold Model for mold cavities and the Needle Model to determine within-the-mass temperature. Send for bulletin 194IR.

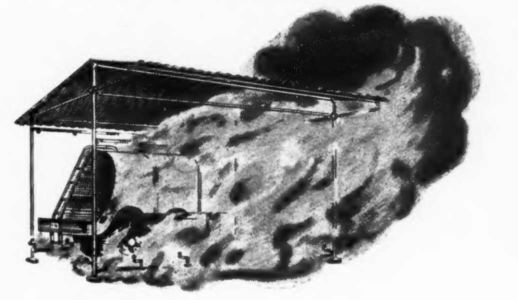
Roll Model

CAMBRIDGE INSTRUMENT CO., Inc.
3732 GRAND CENTRAL TERMINAL, NEW YORK 17, N. Y.

BUY WAR BONDS
"It's a loan . . . not a gift"

CAMBRIDGE
ROLL • NEEDLE • MOLD
PYROMETERS

GASOLINE FIRES in loading racks
. . . are T-o-u-g-h to handle



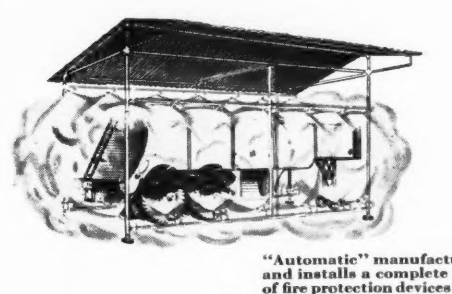
"AUTOMATIC" FIRE-FOG *provides M-u-s-t protection*
IT BLANKETS • IT ISOLATES • IT QUENCHES

● Yes, it's commonly known that gasoline fires are among the hardest to control. Yet we simulated conditions at a gasoline loading rack, kindled a fire beneath a tank truck and permitted the gasoline to boil and overflow, enveloping the entire truck in flames.

Then it was up to FIRE-FOG to prove its ability, and here's what happened:

Instantly an enveloping cloud of misty water spray fell upon the leaping flames. Oxygen "starvation" followed immediately and the fire was blanketed . . . in a matter of seconds *it was completely under control.*

That's how FIRE-FOG works. Its nozzles, strategically placed to cover *any* serious fire hazard, do guard duty 24 hours every day. When fire breaks out, FIRE-FOG performs automatically, quenching fires quickly, surely, and effectively. It is also the ideal fire protection system for electric transformers, oil quench tanks, open tanks of flammable liquids and similar hazards. Inquiries are invited.



"Automatic" manufactures and installs a complete line of fire protection devices and systems for all types of fire hazards. Listed by Underwriters' Laboratories—approved by Factory Mutual Laboratories.

"Automatic"
SPRINKLER CORPORATION OF AMERICA
YOUNGSTOWN, OHIO . . . OFFICES IN 31 CITIES

MANAGEMENT COUNSEL

ROY S. TRIMBLE
Mechanical Engineer

Process engineering, plant layout, ferrous and non-ferrous foundry practices, production planning. Registered, licensed, professional engineer; Mechanical Engineering education, University of Cincinnati. Was process engineer with prominent aluminum manufacturing company, draftsman and assistant plant engineer with public utility corporation and has held various positions in ferrous foundries.

Mr. Trimble is a member of our staff of licensed, professional Engineers and Architects, all of whom are qualified to work closely with members of your company in helping to build a more effective business organization.

- Industrial Engineering
- Methods
- Work Standards and Costs
- Job Evaluation
- Wage Incentives
- Architecture
- Structural Engineering
- Civil Engineering

ASSOCIATED ENGINEERS, INC.
230 East Berry Street AEI Fort Wayne 2, Indiana

TANNEY-COSTELLO CO.

DEALERS AND BROKERS

IN

SCRAP RUBBER

SYNTHETICS — PLASTICS

WE OFFER A SERVICE

BASED ON EXPERIENCE

70 WALL ST.
NEW YORK 5, N. Y.

868 E. TALLMADGE AVE.
AKRON 9, OHIO

Office of Production Management—now the War Production Board. As Mr. Zelomek explains in his preface, this book attempts to survey for the next decade the world economic situation in general and the United States economic situation in particular, since among other things conditions during that period have already been largely predetermined by the known pattern of wartime distortions and the more stable aspects of human nature, and we are going to have a highly prosperous period not because we have solved the problems of capitalist production and distribution, but because we can't help it.

The subjects of relief, industrial reconversion, employment, taxation and finance, housing, transportation, export, and international relations are discussed and analyzed, and some extremely interesting forecasts made. For example, in commenting on the problems of reconversion, the following statement is made:

"The decline in production will be sharp; but it will be short."

In discussing money and inflation, the author states: "The American dollar, measuring as it does the economic resources of the United States, will be the most powerful unit of currency in the world."

In the chapter on taxation, a table of federal government expenditures for the year 1938 showing a total budget of 18 billion dollars is compared with an estimate for a "normal postwar year" in which a budget of 36 billion dollars is indicated.

On the subject of foreign trade, it is stated that this will be influenced by the fact that for a few years we shall live in a divided world, in one part of which trade will be relatively unrestricted, and in another, government control will be the dominating influence. The old problem of providing dollar exchange to foreign buyers will be the same limiting factor it has always been and that it always will be for a country so rich in resources as the United States, it is concluded.

In the final chapter of this thought-provoking little book, a summary of our future is presented and the final paragraphs are noteworthy:

"We are riding on a queer sort of a merry-go-round, you and I and the rest of us. Between 1914 and 1939 we completed the first circuit; cost—one world war; net loss—one opportunity to straighten out a vicious circle. Now, with the ante steeply raised, we begin a second circuit; we are offered a second chance.

"Is it reasonable to expect a third?"

"Plastics—Scientific and Technological." H. Ronald Fleck. Chemical Publishing Co., Inc., Brooklyn, N. Y. Cloth, 5⅜ by 8¾ inches. 336 pages. Price $6.50.

This book is a reasonably comprehensive survey of the literature of the plastics industry, but in view of the fact that it is a reprinting of book written by an English scientist and first published in 1943, it does not acquaint the reader with developments occurring beyond the middle of that year.

Chapters on the chemistry of plastic materials, the physical properties of thermoplastic materials, synthetic elastomers or rubber-like plastics, synthetic resins, and synthetic fibers and textiles lean heavily on the American literature. Chapters on the physical properties of thermosetting materials, adhesives, plywood and impregnated wood, and the manufacture of dies and molds seem to use information mostly of English origin. A chapter on the chemical, physical, and electrical testing of plastics is made, for the most part, of A.S.T.M. specifications.

Because of its international aspects, the book might be useful as a reference source, but it can hardly be recommended for active technicians in either the rubber or plastics industries.

NEW PUBLICATIONS

"1945 Yearbook of The Los Angeles Rubber Group, Inc." The Los Angeles Rubber Group, Inc., Hotel Mayfair, Los Angeles, Calif. 48 pages. This year's edition of the Yearbook contains twice as many pages as the 1944 edition, and some of these extra pages are devoted to a more detailed report on the regular and special meetings of the Group held during the past year. Special features include an article on "The Rubber Industry of Los Angeles" by James F. Bone and sections on classification and general properties of commercial synthetic rubbers produced in U. S. A.; effect of softeners on GR-S compounds; carbon black nomenclature; and formulas for basic general classes of accelerators. As usual, an up-to-date list of Pacific Coast rubber manufacturers and suppliers to the rubber industry, arranged geographically and alphabetically, is contained in this booklet. A list of the members and the latest by-laws of the Group complete this edition of the book.

POINTERS ON PRESSURE-SENSITIVE ADHESIVES

Adhesives compounded with Staybelite* Esters *retain their tackiness* over long periods  ...as proved by aging tests in oxygen bombs, and exposures to high temperatures  and humidities. Thus, these Esters are widely used in  surgical, masking, and transparent tapes, shoe adhesives and the like. The Staybelite Esters are neutral, nonreactive, nonoxidizing, and show little tendency to crystallize on aging, even in the compounded adhesive  They are compatible with Vistanex, GR-S, GR-I, Neoprene, reclaimed rubbers. They are readily milled, and may be easily dispersed in aqueous systems, which facilitates their use with GR-S or Neoprene latexes. Hercules invites you to explore the possibilities  of the Staybelite Esters. Write Synthetics Dept., HERCULES POWDER COMPANY, 914 Market St., Wilmington 99, Del.

HERCULES
STAYBELITE ESTERS

TACKIFYING RESINS FOR SYNTHETIC RUBBER

*Reg. U. S. Pat. Off., by Hercules Powder Co.

SA-52

"100 Years of Air Control." A. Schrader's Son. Brooklyn, N. Y. 1945. Cardboard, 7¼ by 10¼ inches. 48 pages. Primarily a description and account of Schrader's development from its beginning in 1844 up to the present time, this book presents, in chronological form, the growth of A. Schrader's Son. Contributions to the tire industry comprise two chapters of this book. Also covered are the development of diving equipment and the core of the Schrader organization. Illustrations are to be found, one plate illustrating the development of the Schrader tire valve from 1891 up to the present time. A historical chronology from 1844-1944 appears at end of the book.

"BL (Blue Sheet) Index, 1939 to 1944 Inclusive." March, 1945. E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. 270 pages. This book is an index of the entire series of blue sheets issued from January, 1939, through December, 1944. A number of the earlier reports are out of print, and those containing obsolete information will not be reprinted, although most of the blue sheets listed can be obtained.

"United Rolls and Pinions for Every Type of Mill. Price Schedule and Handbook." United Engineering & Foundry Co., Pittsburgh, Pa. 66 pages. The information given is primarily for the user of rolls in rolling mills, whether the product be ferrous or non-ferrous metal or some other material. A description and illustration are given of each of the various types of roll that is most successfully used, and there is a reference to the section to be produced and the nature of the material to be rolled.

"Rio Resin in GR-S for Sunlight Resistance." Booklet No. 9. R. T. Vanderbilt Co., 230 Park Ave., New York 17, N. Y. 8 pages. This booklet shows the improvement in sunlight resistance under both static and dynamic conditions of exposure obtained by the addition of Rio Resin to a GR-S compound and also shows that dilutely ozonized air may be used to produce cracking similar to that obtained in natural sunlight. The booklet is a description of the dynamic exposure test by which specimens are mounted on the Vanderbilt tension flexing machine and rotated in air containing a minute concentration of ozone. This test serves as a substitute for actually exposing the specimens to natural sunlight.

"The Life of a Tire." Goodyear Tire & Rubber Co., Akron, O. 30 pages. This profusely illustrated booklet was prepared for the explanation of tire conditions and their causes. Descriptions and illustrations are given of the more common conditions which reduce tire wear. Also discussed are fabric breaks, cuts, tread and irregular wear, overload, heat injuries, matching dual tires, and wide rims. Of particular value to truck and bus operators is the section covering the use of wide rims. It is emphasized that wide rims develop greater stability which produces the following improvements: reduces rate of tread wear due to decrease in tread scuffing and increased tread contact area; reduces tread cracking, strain in the tire bead, and flex strain on rims; and produces straighter sidewalls. Covered in the chart section are: effect of inflation on tire performance under normal conditions, effect of load on tire performance, effect of temperature on tread wear, effect of date of application of tire performance, effect of wheel position on tire performance, effect of rotation of tires on tread wear, effect of type of roads of tire performance, and bleeding and tire temperature.

"Statex 93 in GR-I Inner Tubes." Bulletin No. 133. Binney & Smith Co., 41 E. 42nd St., New York, N. Y. 3 pages. The advantages of Statex 93, an HMF black, for compounding GR-I for inner tubes are described in this bulletin. All the data reported are on a factory mixed, extruded, and cured inner tube, and a control compound containing a mixture of EPC and SRF blacks was run as a control. Improved processing, trueness to gage, excellent physical properties, decreased set, and better aging were evidenced with the Statex 93 black.

"Our Native Land—A Trust to Keep." Firestone Tire & Rubber Co., Akron, O. 28 pages. **"The Story of Wartime Rationing."** Office of Price Administration, Washington, D. C. 94 pages. **"Tire Plant in Tuscaloosa."** The B. F. Goodrich Co., Tuscaloosa, Ala. 8 pages. **"Second Report—War Production and VE-Day."** James F. Byrnes, Office of War Mobilization and Reconversion, Washington, D. C. 46 pages. **"Automobile Facts and Figures."** 26th Edition, 1944 and 1945. Automobile Manufacturers Association, Detroit 2, Mich. 64 pages. **"Organizing for Package Development"; "Bulk and Package Handling Costs"; "Technical Advances in Packaging."** American Management Association, 330 W. 42nd St., New York 18, N. Y. 34, 76, and 44 pages, respectively.

RUBBER BIBLIOGRAPHY

Polymerization. G. S. Whitby, *Chem. Eng. News*, Sept. 25, 1944, pp. 1570-75.

Carnauba—Brazil's Tree of Life. N. S. Knaggs, *Chem. Eng. News*, Sept. 25, 1944, pp. 1564-69.

Synthetic Rubber Developments. E. R. Gilliland, *Chem. Eng. News*, Jan. 25, 1945, pp. 129-31.

Adhesives and Sealants. J. F. Mason, *Automotive Aviation Ind.*, Jan. 15, 1945, pp. 18-19, 98, 100, 102, 104, 106, 108, 110, 112, 114, 116.

Swelling of Synthetic Rubbers in Mineral Oils. P .O. Powers and B. R. Billmeyer, *Ind. Eng. Chem.*, Jan., 1945, pp. 64-67.

Sealing and Seal-Aging Properties of Rubber Gaskets. T. A. Werkenthin, A. D. Swenson, C. K. Chatten, and R. E. Morris, *Rubber Age (N. Y.)*, Jan., 1945, pp. 389-96; Feb., pp. 513-18. (Conclusion.)

Burma Rubber Prospects. H. Ashplant, *India Rubber J.*, Jan. 13, 1945, p. 7.

The Wear of "Thiokol" and of "Thiokol"-Leather-Resinoid Soling Materials. A. Colin-Russ, *India Rubber J.*, Jan. 20, 1945, p. 14.

India as a Rubber User. *India Rubber J.*, Jan. 27, 1945, p. 7.

Mechanical Behavior of Synthetics. W. Röhrs and K. H. Hauck, *India Rubber J.*, Feb. 3, 1945, p. 13.

Non-Rubber Proofing. J. Kirkwood, *Trans. Inst. Rubber Ind.* Dec., 1944, p. 110.

Thermoplastic Cables. H. B. Chapman, *Trans. Inst. Rubber Ind.*, Dec., 1944, p. 123.

Fire Hazards in the Rubber Industry. H. E. Davis, *Trans. Inst. Rubber Ind.*, Dec., 1944, p. 128.

Technology of the Polyethylene Glycols and Carbowax Compounds. C. P. McClelland and R. L. Bateman, *Chem. Eng. News*, Feb. 10, 1945, p. 247.

Effect of Synthetic Resins on Cellulose and Protein Fibers. D. H. Powers, *Ind. Eng. Chem.*, Feb., 1945, p. 188.

The Production of Rubber from Furfural. L. W. Burnette, *Iowa State College J. Sci.*, 19, 9 (1944).

The Conversion of Fermentation Products to Elastomer Intermediates. J. J. Kolfenbach, *Iowa State Coll. J. Sci.*, 19, 35 (1944).

Future Industrial Organization. The Place of Trade Associations. L. V. Kenward, *Rubber Age (London)*, Feb., 1945, p. 301.

Systems Manifesting Superposed Elastic and Viscous Behavior. A. V. Tobolsky and R. D. Andrews, *J. Chem. Phys.*, 13, 3 (1945).

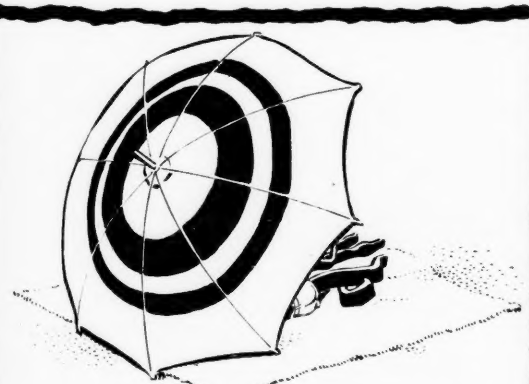
Molecular Theory of Visco-Elastic Behavior of an Amorphous Linear Polymer. T. Alfrey, *J. Chem. Phys.*, 12, 374 (1944).

Retraction and Stress Propagation in Natural and Synthetic Gum and Tread Stocks. B. A. Mrowca, S. L. Dart, and E. Guth, *J. App. Phys.*, 16, 8 (1945).

Rise of Temperature on Fast Stretching of Butyl Rubber. S. L. Dart and E. Guth, *J. Chem. Phys.*, 13, 28 (1945).

Conversion of Hydrocarbons into Butadiene. G. Egloff and G. Hula, *Chem. Revs.*, 35, 279 (1944).

Network Structure and the Elastic Properties of Vulcanized Rubber. P. J. Flory, *Chem. Revs.*, 35, 51 (1944).



FOR EASY PROCESSING USE PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 130)

Regular and Special Constructions of

COTTON FABRICS

Single Filling Double Filling and

ARMY Ducks

HOSE and BELTING Ducks

Drills

Selected Osnaburgs

Curran & Barry

320 BROADWAY NEW YORK

Market Reviews

COTTON & FABRICS

NEW YORK COTTON EXCHANGE
WEEK-END CLOSING PRICES

Futures	Feb. 24	Mar. 31	Apr. 7	Apr. 14	Apr. 21
June	....	21.89	22.09	22.32	22.56
July	21.68	21.75	21.99	22.25	22.46
Oct.	21.13	21.23	21.55	21.83	21.87
Dec.	21.06	21.12	21.49	21.75	21.76
Jan.	21.01	21.06	21.42	21.68	21.73
Mar.	22.05	21.01	21.41	21.65	21.68
May	21.98	20.91	21.19	21.56	21.61

FROM the period of April 2, when the 15/16-inch spot middling price was 22.45¢ to April 18 when the price rose to 22.99¢, there was an almost steady rise in price. At the beginning of the month the market held to a narrow range and absorbed spurts of selling on rumors of peace and the favorable war news from all battlefronts. An impetus was given to prices by approval, by the House, of legislation extending the life of the Commodity Credit Corp. two years with an increase in its borrowing power as well as an improvement in securities markets. The price of 22.50¢ on April 4 closed at virtually the best level of the day with new crop months establishing high levels for contracts. Final prices were four to ten points net higher on that day. After opening two to three points net higher, the market failed to establish a trend until later in the day. The cotton prices in this period registered the largest net gains, at that time, for any week since mid-February and at the close of trading for that week active futures contracts on the New York Cotton Exchange showed net advances of 16 to 42 points. Senator Bankhead's statement that he would recommend the calling of 1943 and 1944 loan stocks and later the WPB's statement that there would be no serious cutbacks in textile contracts after V-E day gave additional strength to prices. Profit taking and scattered hedge selling were absorbed quickly.

The one drop in prices in this period of almost steady climbing occurred on April 11 when the price dropped to 22.71¢. The market lost three to thirteen points net. Starting with overnight losses of one point to four points, the market recovered on some trade support and buying credited to New Orleans, but later it eased on profit taking; this was induced by the belief that it had been weakened technically by the recent advance to new highs of the season. On April 18, the price of cotton was at its highest level since 1928. Thereafter to the end of April there was a somewhat irregular drop in prices from the mid-month level. Spot middling closed at 23.15¢ on May 1.

Fabrics

At the beginning of April, market activity was at a record low. Houses were confused by pending government actions and were so overwhelmed by government directives and uncertainties as to future regulations that an extremely cautious position was assumed. Sales were scattered during this period; activity represented cleaning up of unscheduled production and deliveries were for April, some into May or June. Some business was placed in print cloths. AA-2X ratings were applied in all cases. Osnaburgs were dormant.

As a result of military pressure, the market reached record tightness during the latter part of April, especially in carded goods. Military requirements for the third quarter, some for the rest of the year, were pressed on mills and selling houses. Twills and drills are expected to be taken as fully as they are present during the July-September period.

On April 24 in an emergency measure to increase production of essential tire fabrics the last half of the year, WPB ordered conversion of looms now producing 61-inch Army duck "to the extent necessary" to make 3,581,000 more yards of chafer fabrics for the third quarter and 4,958,000 for the fourth quarter of 1945. This action should increase the linear yardage of chafer fabrics for the tire program by about 33 1/3% by the end of the year. Although not mandatory, effort will also be made to convert looms now making 52-inch tent twills to the extent that such conversions be to chafer fabrics or accepted substitutes. Although such action is difficult, it may reduce the proportion of duck-making looms that must be converted.

Besides the WPB Requirements Committee ordered the Rubber Bureau to prohibit the use of chafer fabrics for products other than tires except under specific WPB authorization.

SCRAP RUBBER

THE known inventories of scrap materials should carry the reclaiming industry for approximately ten months. This figure, however, fails to take into account the tire and tube scrap on some 25 million automobiles and trucks still in road service. Thousands of casings have been retreaded with GR-S, but the bulk of these tires will begin to find their way into the scrap rubber market. To hazard a guess, there will be about a two-year supply of scrap. At the end of that time the tires that are now on military vehicles will appear in huge stockpiles.

Scrap Rubber Ceilings

Inner Tubes†	¢ per Lb.
Red passenger tubes	7½
Black passenger tubes	6¾
Truck tubes	6½
Tires‡	$ per Short Ton
Mixed passenger tires	20.00
Beadless passenger tires	26.00
Mixed truck tires	20.00
Solid tires	36.00
Peelings†	
No. 1 peelings	52.25
2 peelings	33.00
No. 1 light colored (zinc) carcass	57.75
Miscellaneous Items*	
Air brake hose	25.00
Miscellaneous hose	17.00
Rubber boots and shoes	33.00
Black mechanical scrap above 115 sp. gr.	20.00
General household and industrial scrap	15.00

† All consuming centers except Los Angeles.
‡ Akron only.
* All consuming centers.

RECLAIMED RUBBER

RECLAIMERS are becoming more interested in tire parts owing to the fact that whole tires are not generally available. About one-third of the reclaim stock is being obtained from current collections; the other two-thirds are coming from the reclaimers own stockpiles. It is not expected that V-E Day will affect the market immediately; it will be a gradual process, with the military stockpiles shifting slowly to augment the supply of rubber in the reclaimers' stockpiles. With manpower still a major problem, the reclaiming industry is striving to increase its monthly production to 25,000 tons.

Results and findings of the meeting of the Rubber Reclaimers Association scrap classification committee have not, as yet, been announced, but it is expected that results will soon be made public.

Reclaimed Rubber Prices

	Sp. Grav.	¢ per Lb.
Auto Tire		
Black Select	1.16-1.18	7 / 7¼
Acid	1.18-1.22	8 / 8¼
Shoe		
Standard	1.56-1.60	7½/ 7¾
Tubes		
Black	1.19-1.28	11¾/12
Gray	1.15-1.26	12½/13½
Red	1.15-1.32	12½/13
Miscellaneous		
Mechanical blends	1.25-1.50	5 / 6

The above list includes those items or classes only that determine the price bases of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

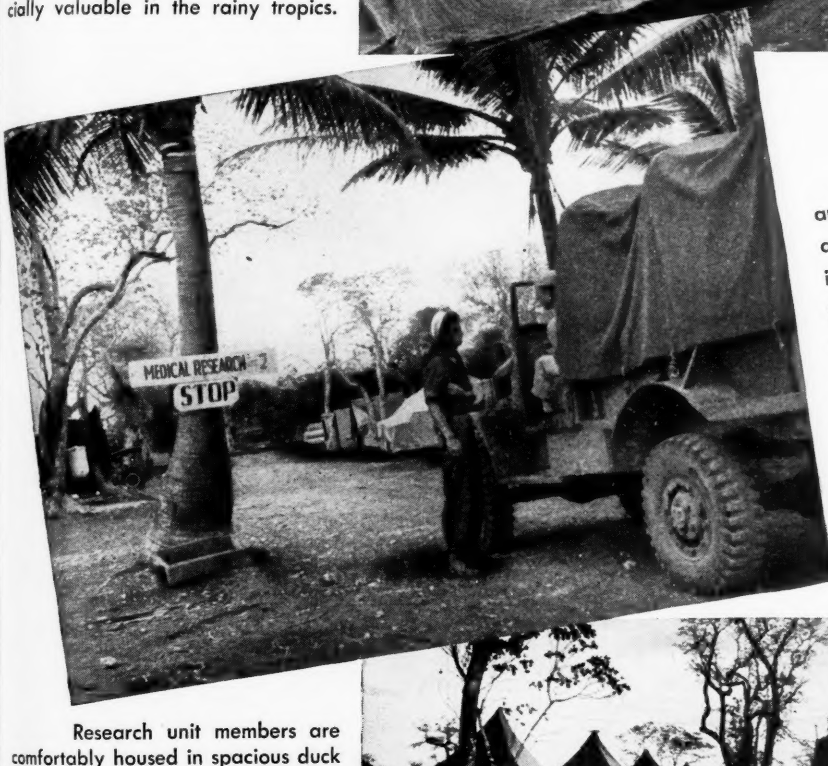
Fixed Government Prices*

	Price per Pound: Civilian Use	Price per Pound: Other Than Civilian Use
Balata		
Manaos Block	$0.38¾	$0.38¾
Swinam Sheet	.42½	.42½
Guayule		
Guayule (*carload lots*)	.17½	.31
Latex		
Normal (*tank car lots*)	.26	.43½
Creamed (*tank car lots*)	.26¾	.44¼
Centrifuged (*tank car lots*)	.27¾	.45¼
Heat-Concentrated (*carload drums*)	.29½	.47
Plantation Grades		
No. 1X Ribbed Smoked Sheets	.22½	.40
1X Thin Pale Latex Crepe	.22½	.40
2 Thick Pale Latex Crepe	.22	.39½
1X Brown Crepe	.21⅜	.38⅞
2X Brown Crepe	.21⅛	.38⅝
2 Remilled Blankets (Amber)	.21¼	.38¾
3 Remilled Blankets (Amber)	.21⅛	.38⅝
Rolled Brown	.18	.35½
Synthetic Rubber		
GR-M (Neoprene GN)	.27½	.45
GR-S (Buna S)	.18½	.36
GR-I (Butyl)	.15½	.33
Wild Rubber		
Upriver Coarse (crude)	.12⅝	.26⅝
(washed and dried)	.20¼	.37¾
Islands Fine (crude)	.14⅝	.28¾
(washed and dried)	.22½	.40
Caucho Ball (crude)	11⅝	.29¾
(washed and dried)	.19½	.37
Mangabiera (crude)	.08½	.19¾
(washed and dried)	.18	.35½

* For a complete list of all grades of all rubbers, including crude, balata, guayule, synthetic, and latex, see Rubber Reserve Co. Circular 17, p. 169, May, 1943, issue.

DUCK FIGHTS DISEASE AND DISCOMFORT IN THE TROPICS

Hospital corpsmen walk down the "Main Street" of an island base in the Pacific where this unit is located to find cures and virus for tropical ailments. Huge quantities of equipment await installation under the protection of duck. This rugged fabric has hundreds of jobs on all fronts . . . is especially valuable in the rainy tropics.



There's always a guard around the area because Japs are still thick. Heavy truck brings in supplies covered with duck tarpaulin. Duck is fairly light in weight . . . is easy to throw over valuable supplies when a tropical downpour threatens. In the background at left is a shower stall, enclosed with duck.

Research unit members are comfortably housed in spacious duck tents. Experimental "laboratories" keep safe under duck, too. Millions of yards of duck are used in tents of all sizes in the Pacific area where rains are heavy and protection must be dependable.

Production of the famous Superior Army, Oceanic, Cypress, Sherman, Monarch, Buckeye and Magnolia duck, which we distribute, continues to be channeled to the armed services and those essential industries able to comply with current government directives. Wellington Sears Company, 65 Worth Street, New York 13, N. Y.

WELLINGTON SEARS COMPANY, NEW YORK

COMPOUNDING INGREDIENTS

Current Quotations*

Abrasives

Fumicestone, powdered	lb.	$0.035 /$0.04
Rottenstone, domestic	lb.	.025 / .03

Accelerators, Inorganic

Lime, hydrated, *l.c.l.*, N. Y.	ton	25.00
Litharge (commercial)	lb.	.085 / .09
Eagle, sublimed	lb.	.085 / .09
Magnesia, calcined, extra light technical	lb.	.25
Heavy technical	lb.	.05 / .1275
Extra light U. S. P.	lb.	.26
Medium light technical	lb.	.12
Magnesia, light technical	lb.	.25

Accelerators, Organic

A-10	lb.	.36 / .42
A-19	lb.	.52 / .58
A-32	lb.	.60 / .70
A-77	lb.	.42 / .55
A-100	lb.	.42 / .55
Accelerator No. 8	lb.	.63 / .65
49	lb.	.40 / .42
552	lb.	1.63
808	lb.	.59 / .61
833	lb.	1.13 / 1.15
Acrin	lb.	.65
Advan	lb.	.55
Altax	lb.	.39 / .41
Arazate	lb.	1.53
B-J-F	lb.	.34 / .39
Beutene	lb.	.59 / .64
Butasan	lb.	1.10
Butazate	lb.	1.10
Butyl Eight	lb.	.97 / .99
C-P-B	lb.	1.95
Captax	lb.	.34 / .36
Cumate	lb.	1.60
Cuprax	lb.	.60
D-B-A	lb.	1.95
Delac P.	lb.	.39 / .48
Di-Esterex-N	lb.	.50 / .57
DOTG (Diorthotolylguanidine)	lb.	.44 / .46
DPG (Diphenylguanidine)	lb.	.35 / .41
El-Sixty	lb.	.36 / .43
Ethasan	lb.	1.10
Ethazate	lb.	1.10
Ethylidene Aniline	lb.	.42 / .43
Ethyl Tuads	lb.	1.25
Ethyl Unads	lb.	1.25
Formaniline	lb.	.36 / .37
Guantal	lb.	.39 / .48
Hepteen	lb.	.34 / .39
Base	lb.	1.25 / 1.40
Lead Oleate Witco	lb.	1.75
Ledate	lb.	1.20
MBT	lb.	.34 / .39
MBTS	lb.	.39 / .44
Methasan	lb.	1.20
Methazate	lb.	1.20
Methyl Tuads	lb.	1.25
Monex	lb.	.25
Morfex "33"	lb.	.60 / .65
Novac	lb.	1.40
O-X-A-F	lb.	.38 / .43
Pentex	lb.	.74 / .84
Flour	lb.	.1225/ .1325
Phenex	lb.	.49 / .54
Pipazate	lb.	1.53
Pip-Pip	lb.	1.63
Polyac	lb.	1.25
R & H 50-D	lb.	.42 / .43
R-2 Crystals	lb.	1.55
Rotax	lb.	.44 / .46
Safex	lb.	1.15 / 1.25
Santocure	lb.	.60 / .67
Selazate	lb.	1.60
Selenac	lb.	1.60
SPDX-G	lb.	.53 / .58
SRA No. 2	lb.	.53 / .55
Super-Sulphur No. 2	lb.	.13 / .15
Tetrone	lb.	1.25
A	lb.	1.85
Thiofide	lb.	.39 / .46
Thionex	lb.	1.25
Thiotax	lb.	.34 / .41
Thiurad	lb.	1.25
Thiuram E	lb.	1.25
M	lb.	1.25
Trimene	lb.	.54 / .64
Base	lb.	1.03 / 1.18
Triphenylguanidine (TPG)	lb.	.45
Tuex	lb.	1.25
2-MT	lb.	.58 / .60
Ulto	lb.	.99 / 1.04
Ureka	lb.	.50 / .57
Blend B	lb.	.50 / .57
C	lb.	.48 / .55

*Prices in general are f.o.b. works. Range indicates grade or quantity variations. Space limitation prevents listing of all known ingredients. Prices are not guaranteed, and those readers interested should contact suppliers for spot prices.

†Price quoted is f.o.b. works (bags). The price f.o.b. works (bulk) is $0.050 per pound. All prices are carlot.

Vulcanex	lb.	$0.42 /$0.43
Z-B-X	lb.	2.45
Zenite	lb.	.37 / .39
A	lb.	.42 / .44
B	lb.	.39 / .41
Zimate, Butyl	lb.	1.10
Ethyl	lb.	1.10
Methyl	lb.	1.20

Activators

Activex	lb.	.20 / .22
Aero Ac 50	lb.	.46 / .52
Barak	lb.	.50
Delac J	lb.	.50 / .60
Dibenzo GMF	lb.	1.50
GMF	lb.	1.95
MODX	lb.	.295 / .345
SL-20	lb.	.1089/ .1135

Age Resisters

AgeRite Alba	lb.	1.95 / 2.05
Gel	lb.	.52 / .54
Hipar	lb.	.61 / .63
Powder	lb.	.40 / .42
Resin	lb.	.43 / .45
D	lb.	.40 / .42
White	lb.	1.23 / 1.33
Akroflex C	lb.	.53 / .55
Albasan	lb.	.69 / .74
Aminox	lb.	.40 / .49
Antox	lb.	.54 / .56
Betanox	lb.	.43 / .52
B-L-E	lb.	.40 / .49
Powder	lb.	.61 / .70
B-X-A	lb.	.43 / .52
Copper Inhibitor X-872-A	lb.	1.15
Flectol H	lb.	.40 / .47
Neozone (standard)	lb.	.61 / .63
A	lb.	.40 / .42
C	lb.	.43 / .45
D	lb.	.40 / .42
Distilled	lb.	.45 / .47
E	lb.	.61 / .63
Oxynone	lb.	.77 / .90
Permalux	lb.	1.19 / 1.20
Santoflex B	lb.	.40 / .47
BX	lb.	.54 / .61
Santovar-O	lb.	1.15 / 1.40
Solux	lb.	1.28 / 1.30
Stabilite	lb.	.48 / .50
Alba	lb.	.69 / .74
Thermoflex	lb.	1.18 / 1.20
A	lb.	.61 / .63
C	lb.	.54 / .56
Tysonite	lb.	.165 / .17
V-G-B	lb.	.43 / .52

Alkalies

Caustic soda, flake, Columbia (*400-lb. drums*)	100 *lbs.*	2.50
Liquid, 50%	100 *lbs.*	1.75
Solid (*100-lb. drums*)	100 *lbs.*	2.10

Antiscorch Materials

Cumar RH	lb.	.105
E-S-E-N	lb.	.34 / .39
R-17 Resin (*drums*)	lb.	.1075
RM	lb.	1.25
Retarder W	lb.	.36
Retardex	lb.	.445 / .475
U-T-B	lb.	.34 / .39

Antiseptics

Compound G-4	lb.	.95 / 1.40
G-11	lb.	4.50 / 4.75

Antisun Materials

Antisol	lb.	.23 / .28
Heliozone	lb.	.23 / .24
S.C.R.	lb.	.32 / .34
Sunproof	lb.	.2275/ .2775

Blowing Agents

Unicel	lb.	.50

Brake Lining Saturant

B.R.T. No. 3	lb.	.0175/ .0185

Carbon Black

Conductive Channel—CC

Conductex A	lb.	.05 / .085
Huber 35-C	lb.	.075
Spheron C	lb.	.0455
I	lb.	.0405
N	lb.	.15
Witco R20	lb.	.0455
R40	lb.	.105 / .14
Voltex	lb.	.105 / .14

Hard Processing Channel—HPC

Continental F	lb.	.0525†
Huber HX	lb.	.0525†
Kosmobile S/Dixiedensed S	lb.	.0525†
Micronex Mark II	lb.	.0525†
Spheron #4	lb.	.0525†
Witco 6	lb.	.0525†

Medium Processing Channel—MPC

Arrow	lb.	.0525†
Continental A	lb.	.0525†
Huber TX	lb.	.0525†
Kosmobile 66/Dixiedensed 66	lb.	.0525†
Spheron #6	lb.	.0525†
Standard Micronex	lb.	.0525†
Witco 1	lb.	.0525†

Easy Processing Channel—EPC

Continental AA	lb.	$0.0525†
Kosmobile 77/Dixiedensed 77	lb.	.0525†
Micronex W-6	lb.	.0525†
Spheron #9	lb.	.0525†
Witco 12	lb.	.0525†
Wyex	lb.	.0525†

Conductive Furnace—CF

Statex A	lb.	.08 /$0.10
Sterling I	lb.	.09

Fine Furnace—FF

Statex B	lb.	.07 / .09

High Modulus Furnace—HMF

Kosmos 40/Dixie 40	lb.	.05 / .075
Modulex	lb.	.05
Philblack A	lb.	.05 / .06
Statex 93	lb.	.05 / .075
Sterling L	lb.	.05

Semi-Reenforcing Furnace—SRF

Continex	lb.	.035 / .055
Furnex	lb.	.035 / .06
Gastex	lb.	.035 / .06
Kosmos 20/Dixie 20	lb.	.035†
Pelletex	lb.	.035 / .06
Sterling	lb.	.035†
Witco	lb.	.035 / .055

Fine Thermal—FT

P-33	lb.	.04

Medium Thermal—MT

Thermax	lb.	.0225

Colors

Black

Lampblack (commercial), *l.c.l.*	lb.	.12 / .14

Blue

Du Pont Powders	lb.	2.25 / 3.75
Toners	lb.	.30 / 3.50

Brown

Mapico	lb.	.1135

Green

Chrome	lb.	.25
Oxide (*freight allowed*)	lb.	.25
Chromium Hydroxide	lb.	.70
Guignet's (*bbls.*)	lb.	.70
Toners	lb.	.35 / 4.00

Orange

Du Pont Powders	lb.	2.75 / 3.05
Toners	lb.	.30 / 1.50

Red

Antimony		
Crimson, 15/17%	lb.	.48
R.M.P. No. 3	lb.	.48
Sulphur free	lb.	.52
7-A	lb.	.37
Z-2	lb.	.25
Du Pont Powders	lb.	.48 / 1.65
Iron Oxide, *l.c.l.*	lb.	.07 / .15
Mapico	lb.	.0885/ .096
Rub Er-Red (*bbls.*)	lb.	.0975
Toners	lb.	.25 / 4.15

White

Lithopone (*bags*)	lb.	.0425/ .045
Albalith	lb.	.0425/ .045
Eagle	lb.	.0725/ .0750
Titanium Pigments		
Rayox	lb.	.145 / .155
Titanox-A LO and MO	lb.	.145 / .15
C	lb.	.055 / .0575
Zopaque (*50-lb. bags*)	lb.	.145
Zinc Oxide		
Azo ZZZ-11	lb.	.0725/ .075
44	lb.	.0725/ .075
55	lb.	.0725/ .075
66	lb.	.905 / .0975
Eagle, lead free	lb.	.0725/ .0750
French Process, Florence		
Green Seal-8	lb.	.09 / .0925
Red Seal-9	lb.	.085 / .0875
White Seal-7	lb.	.095 / .0975
Kadox, Black Label-15	lb.	.0725/ .075
No. 25	lb.	.085 / .0875
72	lb.	.0725/ .075
Red Label-17	lb.	.0725/ .075
Horse Head XX Special 3	lb.	.0725/ .075
XX Red-4	lb.	.0725/ .075
78	lb.	.0725/ .075
156	lb.	.0725/ .075
166	lb.	.0725/ .075
St. Joe (lead free)		
Black Label	lb.	.0725/ .075
Green Label	lb.	.0725/ .075
Red Label	lb.	.0725/ .075
U.S.P. No. 12	lb.	.105 / .1075
Zinc Sulphide Pigments		
Cryptone ZS No. 800	lb.	.0825 .085

Yellow

Du Pont Powders	lb.	.70 / 1.75
Mapico	lb.	.0685/ .071
Toners	lb.	.50 / 1.37

Dispersing Agents

Bardex	lb.	.0425/ .045
Bardol	lb.	.02 / .0275
B	lb.	.05 / .0525
Nevoll (*drums, c.l.*)	lb.	.02 / .025
Triton R-100	lb.	.12 / .25

VULCANIZED VEGETABLE OILS

—RUBBER SUBSTITUTES—

Types, grades and blends for every purpose, wherever Vulcanized Vegetable Oils can be used in production of Rubber Goods—be they Synthetic, Natural, or Reclaimed.

A LONG ESTABLISHED AND PROVEN PRODUCT

THE CARTER BELL MFG. CO.
SINCE
CARTER BELL PRODUCTS
1903
SPRINGFIELD, NEW JERSEY

Capitol Process Liner Treatment

versus

Untreated Liners

If you are using untreated liners because it has been believed that processing would make them too expensive, we emphasize that Capitol Process Liner Treatment is reasonable in cost.

Further, our treatment will make it possible to use your liners for a considerably longer time, thus actually reducing purchases of new cotton piece goods. Over a period of time Capitol Liner Treatment will, literally, "pay for itself."

Because of the stringent shortage of every kind of cotton piece goods, serious consideration of our Liner Treatment may effectively relieve one of your current problems. We shall be glad to answer your inquiries.

TEXTILE PROOFERS, INC.

181-193 Culver Ave., Jersey City 5, N. J.

Originators of the Liner  *Capitol Process Treatment*

Extenders

Advagum 1098	lb.	$0.42	
1198	lb.	.40	
Dielex	lb.	.055	/$0.06
Alba	lb.	.45	
Extender 15	lb.	.32	
Extendex C	lb.	.15	
Naftolen R-100	lb.	.10	/ .12
Oroplast H	lb.	.1125	/ .1175
L	lb.	.0725	/ .0825
M	lb.	.0825	/ .0925

Fillers, Inert

Asbestos Fiber	ton	15.50	/48.00
Barytes	ton	25.55	/40.00
Off color, domestic	ton	29.00	
White, domestic	ton	38.50	/40.00
Blanc fixe, dry, precip.	ton	80.00	
Calcene T	ton	37.50	/45.00
Kalite No. 1	ton	26.00	
Kalvan	ton	100.00	
Magnesium carbonate *l.c.l.*	lb.	.0625	/ .075
Pyrax A	ton	7.90	
Whiting			
Suprex White (precipitated calcium carbonate)	ton	32.50	
Witco, *c.l.*	ton	16.50	
Witcarb	ton	32.50	
R	ton	100.00	
R-12	ton	32.50	

Finishes

Mica, *l.c.l.*	lb.	.045	/ .055
Rubber lacquer, clear	gal.	1.00	/ 2.00
Colored	gal.	2.00	/ 3.50
Shoe Varnish	gal.	1.45	
Talc	ton	25.00	/35.00

Flock

Cotton flock, dark	lb.	.095	/ .112
Dyed	lb.	.45	/ .85
White	lb.	.12	/ .20
Fabrifil X-24-G	lb.	.095	
X-24-W	lb.	.135	
Filfloc 6000	lb.	.16	
F-40-9000	lb.	.105	
Rayon flock, colored	lb.	1.00	/ 1.50
White	lb.	.75	/ 1.25

Latex Compounding Ingredients

Accelerator 89	lb.	1.20	
Advawet	lb.	.46	
Aerosol (*drums*)	lb.	.35	
Antox, dispersed	lb.	.54	
Aquarex BBX Conc.	lb.	.70	
Areskap No. 50	lb.	.18	/ .24
100, dry	lb.	.39	/ .51
Aresket No. 240	lb.	.16	/ .22
300, dry	lb.	.42	/ .50
Aresklene No. 375	lb.	.35	/ .50
400, dry	lb.	.51	/ .65
Black No. 25, dispersed	lb.	.22	/ .40
Casein	lb.	.24	/ .2475
Collocarb (Dispersed Wyex)	lb.	.06	/ .07
Copper Inhibitor X-872	lb.	2.25	
Darvan No. 1	lb.	.30	/ .34
2	lb.	.30	/ .34
Dispersex No. 15	lb.	.11	/ .12
20	lb.	.08	/ .10
Factex Dispersion A	lb.	.185	
Marmix	gal.	1.75	/ 2.00
Micronex, Colloidal	lb.	.06	/ .07
Nevilloid C-55	lb.	.12	
Resin V	lb.	.13	
Santomerse D	lb.	.41	/ .65
S	lb.	.11	/ .25
Sodium Stearate	lb.	.40	
Stablex A	lb.	.90	/ 1.10
B	lb.	.70	/ .90
C	lb.	.40	/ .50
Sulphur, dispersed No. 2	lb.	.08	/ .12
Tepidone	lb.	.63	
Tysonite, dispersed	lb.	.32	/ .35
Zinc oxide, dispersed	lb.	.12	/ .15

Mineral Rubber

Black Diamond, *l.c.l.*	ton	25.00	/30.00
B.R.C. No. 20	lb.	.0105	/ .0115
Hydrocarbon, Hard	ton	25.00	/27.00
Lode	lb.	.04	/ .045
MilliMar	lb.	.055	
Parmr	ton	21.00	/29.00
Pioneer, *c.l.*	lb.	25.00	/30.00
Witco MR solid	ton	25.00	
Granular	ton	30.00	

Mold Lubricants

Aluminum Stearate	lb.	.23	/ .24
Aquarex D	lb.	.60	
MDL Paste	lb.	.25	
Colite	gal.	.90	/ 1.15
Dipex	lb.	.1275	/ .15
Lubrex	lb.	.25	/ .30
Rubber-Glo, conc. regular	gal.	.94	/ 1.15
Type W	gal.	.99	/ 1.20
Sericite	ton	65.00	
Soapstone, *l.c.l.*	ton	15.00	/35.00
Zinc stearate	lb.	.30	/ .31

Reclaiming Oils

B.R.V.	lb.	.03	/ .0375
C-10	gal.	.19	/ .24
D-4	gal.	.17	/ .22
E-5	gal.	.15	/ .20
No. 1621	lb.	$0.016	/$0.0235
S.R.O.	lb.	.015	/ .0225
X-60 (reclaiming)	gal.	.20	/ .28
X-443	gal.	.20	/ .27

Reenforcers, Other Than Carbon Black

Buca	ton	40.00	
Carbonex Flakes	lb.	.03	/ .035
S	lb.	.031	/ .036
Plastic	lb.	.031	/ .0335
Clays			
Aerfloted Hi-White	ton	10.00	
Paragon	ton	10.00	
Suprex	ton	11.00	/23.50
Catalpo, *c.l.*	ton	30.00	
Champion	ton	11.00	/23.50
China	ton	25.00	
Crown	ton	11.00	/23.00
Dixie	ton	11.00	
Hydratex R	ton	20.00	
"L"	ton	10.00	
Langford	ton	9.50	/20.00
Magnolia	ton	10.00	
McNamee	ton	10.00	
#33	ton	30.00	
Par	ton	11.00	
Paraforce, *c.l.*	ton	50.00	
Witco, *c.l.*	ton	25.00	
Cumar EX	lb.	.0525	
MH	lb.	.065	/ .1175
V	lb.	.0975	/ .1275
465 Resin	lb.	.035	
"G" Resin	lb.	.08	
Nevindene	lb.	.105	/ .135
Resinex	lb.	.0275	/ .0325
Silene "EF"	lb.	.055	/ .06
Silical	ton	65.00	/85.00

Reodorants

Coumarin	lb.	2.75	/ 3.25
Curodex 19	lb.	4.75	
188	lb.	5.75	
198	lb.	6.75	
Para-Dors (ABCDE)	lb.	.25	/ 4.00
Rodo No. 0	lb.	4.00	/ 4.50
10	lb.	5.00	/ 5.50
Vanillin	lb.	2.25	/ 2.95

Rubber Substitutes

Black	lb.	.09	/ .15
Brown	lb.	.105	/ .1875
White	lb.	.0975	/ .165
Factice			
Amberex Type B	lb.	.20	
Brown	lb.	.095	/ .19
Neophax A	lb.	.165	
B	lb.	.165	
White	lb.	.10	/ .20

Softeners and Plasticizers

Abalyn	lb.	.0722	/ .0947
Ambidex	lb.	.23	
"S"	lb.	.23	
B.R.T. No. 7	lb.	.02	/ .021
Belro Resin	100 lb.	2.71	/ 3.00
Bondogen	lb.	.98	/ 1.05
Bunnatol G	lb.	.40	/ .50
S	lb.	.40	/ .50
Butac	lb.	.085	/ .105
Butyl Roleate	lb.	.16	/ .195
Capryl Alcohol	lb.	.16	/ .195
Circosol-2XH Elasticator for GR-S	gal.		
Dibenzyl Sebacate	lb.	.67	/ .74
Phthalate	lb.	.51	/ .59
Dibutyl Sebacate	lb.	.46	/ .565
Dicapryl Phthalate	lb.	.25	/ .30
Dipentene	gal.	.56	/ .58
Dipolymer Oil	gal.	.33	/ .38
Dispersing Oil No. 10	lb.	.0375	/ .04
Duraplex C-50 LV, 100%	lb.	.25	/ .295
Dufrex 6	lb.	.25	/ .375
Hercolyn	lb.	.1122	/ .1347
JMH	lb.	.65	/ .67
Marbon S	lb.	.65	/ .75
S-1	lb.	.65	/ .75
Myristilene	lb.	.20	/ .30
Nevinol	lb.	.13	
No. 1-D Heavy Oil	lb.	.04	
Nuba resinous pitch (*drums*)			
Grades No. 1 and No. 2	lb.	.029	
3-X	lb.	.0425	
Palmalene	lb.	.15	
Para Flux (reg.)	gal.	.17	/ .18
No. 2016	gal.	.135	/ .19
Para Lube	lb.	.046	/ .048
Paradene No. 1 (*drums*)	lb.	.0525	
No. 2	lb.	.0525	
Special (*drums*)			
20 to 35° C. M.P.	lb.	.0265	
35 to 45° C. M.P.	lb.	.0625	
45 to 75° C. M.P.	lb.	.0575	
Paraplex AL-111	lb.	.21	/ .25
G-25, 100%	lb.	.75	
Phthalate	lb.	.51	/ .59
Paroils	lb.	.0975	/ .18
Picco-100	lb.	.09	
Piccocizer "30"	lb.	.055	/ .06
Piccolastic A-5	lb.	.24	/ .245
Piccolyte Resins	lb.	.15	/ .185
Piccoumaron Resins	lb.	.045	/ .15
Piccovol	lb.	.20	/ .25
Pictar	gal.	.18	/ .23
Oil	gal.	.45	
Plasticizer B	lb.	$0.35	/$0.45
35	lb.	.205	/ .24
36	lb.	.305	/ .34
Plastoflex No. 10	lb.	.20	
No. 20	lb.	.25	
Plastogen	lb.	.0775	/ .08
Plastone	lb.	.27	/ .30
Poly-pale Resin	lb.	.06	/ .07
R-19 Resin (drums)	lb.	.1075	
21 Resin (*drums*)	lb.	.1075	
Reogen	lb.	.115	/ .12
Resin R6-3	lb.	.38	/ .40
Rio Resin	lb.	.36	/ .38
RPA No. 1E	lb.	.55	
2	lb.	.65	
3	lb.	.46	
4	lb.	.80	
5	lb.	.57	
Santicizer B-16	lb.	.32	/ .36
E-15	lb.	.34	/ .38
M-17	lb.	.355	/ .39
Sebacic Acid	lb.	.48	/ .55
Solvenol	gal.	.56	/ .58
Staybelite	lb.	.06	/ .065
Syntac	lb.	.275	/ .35
TR-11	lb.	.035	
Tarzac	lb.	.23	/ .24
Tricresyl Phosphate	lb.	.24	/ .245
Turgum "S"	lb.	.0675	
Vinsol Resin	lb.	.025	/ .035
Vistac No. 1	lb.	.20	/ .214
No. 2	lb.	.214	/ .227
Witco No. 20, *l.c.l.*	gal.	.175	
X-1 resinous oil (*tank car*)	lb.	.011	/ .016
XX-100 Resin	lb.	.0525	

Softeners for Hard Rubber Compounding

Resin C Pitch 45°C. M.P.	lb.	.01	/ .016
60°C. M.P.	lb.	.01	/ .016
75°C. M.P.	lb.	.01	/ .016

Solvents

Carbon Bisulphide	100 lbs.	5.00	/ 5.75†
Tetrachloride	gal.	.73	/ .94†
Cosol No. 1	gal.	.26	/ .34
No. 2	gal.	.25	/ .33
No. 3	gal.	.22	/ .30
GVL	lb.	1.00	
Industrial 90% benzol (*tank car*)	gal.	.15	/ .22
Nevsol	gal.	.245	/ .31
Picco	gal.	.22	/ .32
Skellysolve	gal.	.071	/ .105
Tollac	gal.	.28	/ .33

Stabilizers for Cure

Barium Stearate	lb.	.29	/ .32
Calcium Stearate	lb.	.26	/ .27
Laurex (*bags*)	lb.	.1475	/ .1725
Magnesium Stearate	lb.	.31	/ .32
Stearex, single pressed	lb.	.14⅞	/ .15⅞
double pressed	lb.	.15⅜	/ .16⅜
Beads	lb.	.14⅜	/ .15⅜
Stearic acid, single pressed	lb.	.15¾	/ .16⅞
Stearite, *c.l.*	lb.	.14375	
Zinc Laurate	lb.	.29	/ .32
Stearate	lb.	.30	/ .31

Synthetic Rubber

Butaprene NF	lb.	.45	/ .60
NL	lb.	.48	/ .63
NXM	lb.	.50	/ .65
Chemigum N-1	lb.	.53	/ .60
Hycar OR-15	lb.	.50	/ .65
OR-25	lb.	.45	/ .60
OS-10	lb.	.45	/ .60
Neoprene Latex Type (dry weight)			
60	lb.	.43	/ .44
571	lb.	.36	/ .40
Concentrated	lb.	.41	/ .42
572	lb.	.45	/ .46
Neoprene Type CG	lb.	.50	
E	lb.	.65	
FR-S	lb.	.65	
GN-A	lb.	.28	
KNR	lb.	.75	
Paraplex X-100	lb.	1.00	
Perbunan 26	lb.	.48	
Synthetic 100	lb.	.41	

Tackifiers

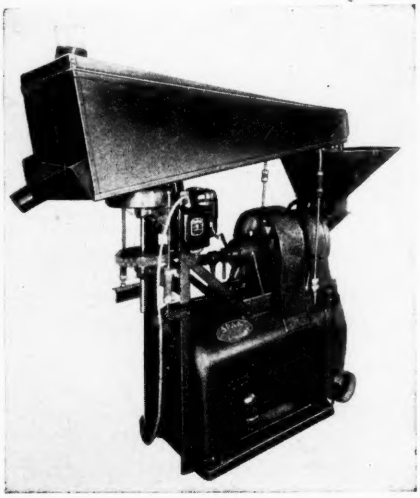
B.R.H. No. 2	lb.	.015	
Piccolastic A-25	lb.	.24	/ .245
Plastic	lb.	.12	
Ty-Ply Q	gal.	6.75	/ 8.00
A	gal.	6.75	/ 8.00
S	gal.	6.75	/ 8.00
A	gal.	6.75	/ 8.00

Vulcanizing Ingredients

Magnesia, light (for neoprene)	lb.	.25	
Sulphur	100 lbs.	2.05	
Insoluble, 60	lb.	.16	
Rubbermaker's commercial	100 lbs.	2.05†	
Refined	100 lbs.	2.40†	
Telloy	lb.	1.75	
Tonox	lb.	.50	/ .59
Vandex	lb.	1.75	
Vultac 1	lb.	.38	/ .45
2	lb.	.38	/ .45
3	lb.	.42	/ .49

SPAN
GRINDING MILL
For Producing
GROUND RUBBER SCRAP

Ground Rubber Scrap is being used to advantage in Molded Goods of all types.



SPAN GRINDING MILL (Type VIII), illustrated above, reduces all grades of vulcanized rubber scrap to fine powder form ready to be mixed with ordinary molding compounds.

Provided with an attached vibrating screen, it is a compact, self-contained unit producing a uniform material automatically and at low cost. Capacity 200 to 400 lbs. per hour. Power required, 25 H. P.

Type X (not illustrated), for larger production.

Send for Full Information

M. PANCORBO
155 JOHN STREET NEW YORK 7, N. Y.

RUBBER ★ SYNTHETIC RUBBER ★ PLASTICS

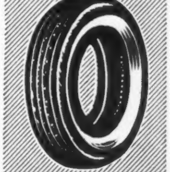
THE Schuster MAGNETIC CALENDER GAUGE SAVES THAT MATERIAL

For upwards of 15 years, the Schuster Magnetic Calender Gauge has unerringly set rubber calender rolls to a predetermined thickness and correctly maintained that thickness. It has saved the time of hand-miking, eliminated human error, saved the stock sampled for calender tests, and assured uniform thickness in the finished product.

All this, *at the right time—before* damage is done. And *continuously*—the only way worth while.

The instrument is simple in design . . . rugged in construction . . . practically without wearing parts . . . adjustable to any thickness. Originally used for rubber, it has taken over just as deftly for synthetic rubber, plastics, cellulose, and other media. No matter what the article, your coating must be thick enough, but not even 1/1000" too thick, or the war effort suffers irreparable loss. No matter what the material, you've got to s-t-r-e-t-c-h it as far as possible—and "possible" daily proves to have a new, elastic meaning.

Better investigate the Schuster Magnetic Calender Gauge at once, with or without automatic control. Every installation has to be engineered to the job . . . Please *give us time to do it right.*



Ask for our bulletin on the Schuster Magnetic Gauge.

THE MAGNETIC GAUGE COMPANY
60 EAST BARTGES STREET AKRON, OHIO
Eastern States Representative—
BLACK ROCK MANUFACTURING CO., Bridgeport, Conn.

Waxes

Antisol	*lb.*	$0.225	/$0.275
Carnauba, No. 3 chalky	*lb.*	.7125	
2 N.C.	*lb.*	.7675	
3 N.C.	*lb.*	.735	/ .745
1 Yellow	*lb.*	.8325	
2	*lb.*	.8125	
Carnube	*lb.*	.49	/ .59
Monten	*lb.*	.12	/ .17
Rubber Wax No. 118			
Colors	*gal.*	.86	/ 1.41
Neutral	*gal.*	.76	/ 1.31

OBITUARY

Weldon Roberts

WELDON ROBERTS, pioneer in the manufacture of rubber erasers, passed away March 25 in New York, N. Y. He had been president and chairman of the board of Weldon Roberts Rubber Co., Newark, N. J., which he had founded in March, 1912. Mr. Roberts is credited with being responsible for the introduction of colored erasers in America. He also pioneered in the manufacture of the Brightboy line of soft rubber bonded abrasives for metal finishing.

Mr. Roberts, who was born in Newark 77 years ago, began his career on March 12, 1888, with the C. Roberts Rubber Co., established by his uncle in Newark. The deceased served as president of the company from 1895 to 1910.

He is survived by his wife, two sons, two grandchildren, and a sister.

Funeral services were held in Montclair, N. J., March 28.

Andrew J. Pennington

ANDREW J. PENNINGTON, 79, retired executive of National-Standard Co., Niles, Mich., died at Cuyahoga Falls, O., on April 8 after a long illness. He came to National-Standard as a sales engineer in 1920 and retired from active work in November, 1933. He had previously been associated with Lee Rubber & Tire Corp., Johnson & Johnson, and Brunswick-Balke-Collender Co. He is survived by a son and two daughters.

Charles J. Morton

CAPT. CHARLES J. MORTON, formerly sales representative of the New Jersey Zinc Sales Co., Chicago, Ill., was reported killed in a plane accident in Italy on February 2. Captain Morton entered the service in March, 1942, and was sent overseas in February, 1943. He was a member of General Clark's Fifth Army and took part in the North African campaign and in the invasions of Sicily and the Italian mainland. He had been active in the Italian theater of operations for the past 24 months. The deceased had recently been appointed Battalion Supply Officer as well as Summary Court-Martial Officer, and in this dual capacity had found it necessary to fly by regular airplane courier to several of the battalion's detachments in Italy.

Starting with New Jersey Zinc in 1927, he served for a year in the testing department at the Palmerton, Pa. plant. Then in 1928 he was transferred to the Chicago sales office, being assigned to the territory including Illinois, Michigan, Minnesota and Wisconsin.

He is survived by his mother, two brothers and a sister.

George L. Roberts

GEORGE L. ROBERTS, chief chemist of United Carbon Co., Charleston, W. Va., died suddenly of a heart attack April 5 at Yarmouth, Iowa, while on a business trip to the Midwest. He had been with the company since 1930 and until recently had been on loan to the government in Washington in an advisory capacity in connection with the synthetic rubber program.

The deceased was born in Camden, N. J., September 19, 1898. He attended the local grade and high schools, Perkiomen Academy, and George Washington University (B.S. and M.S.). His studies at the University were interrupted, however, while he served two years (1917 and 1918) with the Marine Corps, seeing active service in France and Germany.

Following his graduation, Mr. Roberts was connected with the National Bureau of Standards in Washington for several years.

He belonged to Delta Tau Delta, American Chemical Society, Institute of the Rubber Industry, American Society for Testing Materials, American Geographical Society, Alchemist Society, Kanawha Country Club, and Charleston Lions Club. Besides Mr. Roberts had written several articles of interest to the rubber industry.

He is survived by his wife, two sons, a daughter, and a sister.

Rubber Manufacturers Association

(*Continued from page* 195)

Safety Foundation, the National Industrial Conference Board, and other trade associations or groups whose activities border on those of the rubber industry.

Product Divisions Further Subdivided

Most of the product divisions listed above have many active committees and subdivisions. Cooperating with the Tire Division, for instance, is a very active R.M.A. tire accessories and repair materials committee and a tire service managers committee. J. J. Wolfe is chairman of the former committee, and Mr. Flint of the latter.

An outstanding example, also, is the Mechanical Division, which is divided into the following subdivisions. Industrial Rubber Goods; Jar Rings; Latex Foam; Mats and Matting; Molded, Extruded; Lathe-Cut and Chemically Blown Sponge; Rubber Covered Roll; Tape; Thread; and V-Belt. The Industrial Rubber Goods Subdivision, in turn, has a belting committee, hose committee, and a packing committee.

Each division has a duly appointed R.M.A. technical committee, and the work of these technical committees in promoting industry-wide simplification of products has been of great assistance in the war effort and frequently has been able to expedite production.

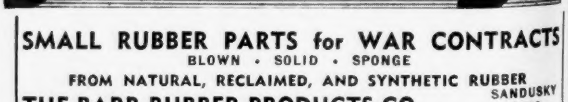
On questions of major policy, the Association looks for advice to the board of directors, the members of which, together with the officer personnel of the Association, are shown in the accompanying box. The staff of the Association recently has been increased, and it looks forward to the opportunity of assisting the industry in every way possible to play a leading role in peace as it has in war.

FOR CUT AND CRACK GROWTH RESISTANCE
USE PHILBLACK A

(FOR FURTHER DETAILS, SEE AD ON PAGE 130)

PHILIP TUCKER GIDLEY
Consulting Technologist — Synthetic Rubber
We are equipped to perform all types of physical and chemical tests for synthetic rubber.
Fairhaven — Massachusetts

FOSTER D. SNELL, INC.
Our staff of chemists, engineers and bacteriologists with laboratories for analysis, research, physical testing and bacteriology are prepared to render you
Every Form of Chemical Service
304 Washington Street — Brooklyn 1, N. Y.



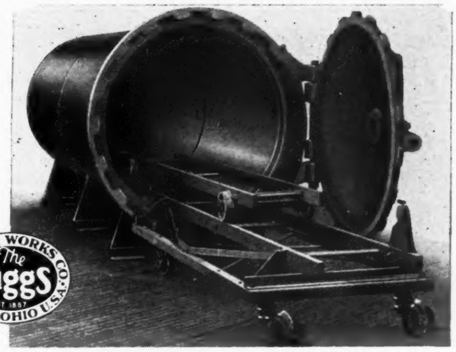
SMALL RUBBER PARTS for WAR CONTRACTS
BLOWN • SOLID • SPONGE
FROM NATURAL, RECLAIMED, AND SYNTHETIC RUBBER
THE BARR RUBBER PRODUCTS CO. SANDUSKY OHIO

RMP ANTIMONY FOR RED RUBBER

. . . . The utmost in pleasing appearance with no deteriorating effect whatever.

●

RARE METAL PRODUCTS CO.
BELLEVILLE, N. J.



Vulcanizer with inside car and outside transfer truck. Built to meet customers' requirements; all sizes.

BIGGS Vulcanizers are Standard Equipment in the Rubber Industry

Biggs-built vulcanizers and devulcanizers have always had a prominent place in the development of the rubber industry. For over 45 years Biggs has furnished single-shell and jacketed vulcanizers both vertical and horizontal, as well as many different types of devulcanizers. Biggs modern all-welded units with quick-opening doors are available in all sizes and for various working pressures—with many special features.

Ask for our Bulletin No. 45

THE Biggs BOILER WORKS CO.
1007 BANK STREET • AKRON 5, OHIO, U.S.A.

PALMALENE

A NEW PALM FATTY ACID OF MEDIUM TITRE, SYNTHETICALLY MADE

Excellent as a replacement for Stearic Acid in rubber compounding

PALMALENE SPECIFICATIONS

Saponification Number	180-185
Iodine Value	55-60
Titre	35

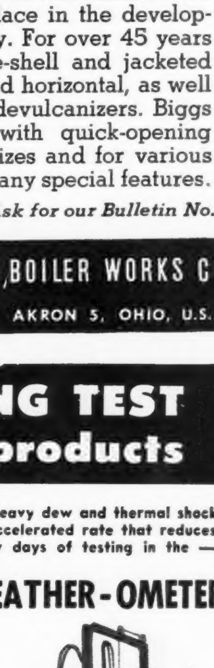
THE BEACON COMPANY
PURITY · UNIFORMITY · DEPENDABILITY
Chemical Manufacturers
97 BICKFORD STREET · BOSTON, MASSACHUSETTS

In Canada: PRESCOTT & CO REG'D., 774 ST. PAUL ST., W. MONTREAL

WEATHERING TEST for rubber products

Weathering effects of sunlight, rain, heavy dew and thermal shock reproduced in the laboratory at an accelerated rate that reduces years of actual weathering to a few days of testing in the —

ATLAS TWIN-ARC WEATHER-OMETER



The Twin-Arc Weather-Ometer has full automatic control of light and water periods. The Atlas Cycle Timer unit can be set to reproduce any combination of weathering conditions. A direct reading thermal regulator, automatic shut-off switch and a running time meter is included on the control panel. After setting exposure cycle on the control panel the Weather-Ometer is safe to be left in continuous operation over night without attention except to replace carbons once in 24 hours.

The Atlas Weather-Ometer is required to meet Federal Specifications demanding accelerated weathering tests.

ATLAS ELECTRIC DEVICES COMPANY
361 W. Superior Street, Chicago 10, Illinois

Originators and sole manufacturers for over a quarter of a century. . . Weather-Ometers, Launder-Ometers, Fade-Ometers are the accepted standard accelerated testing machines all over the world.

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES	SITUATIONS WANTED RATES	SITUATIONS OPEN RATES
Light face type $1.00 per line (ten words)	Light face type 40c per line (ten words)	Light face type 75c per line (ten words)
Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)
Allow nine words for keyed address.	**Address All Replies to New York Office at 386 Fourth Avenue, New York 16, N. Y.**	*Replies forwarded without charge*

SITUATIONS OPEN

SPREADING ROOM FOREMAN
with experience in general proofing.

Suburban Boston Area. Permanent postwar position. Must be able to furnish Certificate of Availability.

ADDRESS BOX NO. 910, Care of INDIA RUBBER WORLD.

TIRE CURING FOREMAN—Good opportunity for experienced foreman capable of supervising production in pot heaters and individual vulcanizers. Offers attractive postwar as well as present-day opportunity. Eastern concern. Address Box No. 108, care of INDIA RUBBER WORLD.

TIRE FINISHING SUPERVISOR—Must have experience in supervising all duties connected with cured tire final finishing. Excellent opportunity for advancement with postwar security. Located in Pennsylvania. Address Box No. 109, care of INDIA RUBBER WORLD.

TUBE ROOM SUPERINTENDENT—Must have thorough knowledge of all phases of inner tube manufacture. Opening offers excellent opportunity to man with initiative and ability. Plant located in Pennsylvania. State all qualifications first letter. Address Box No. 110, care of INDIA RUBBER WORLD.

CHEMICAL ENGINEER—COLLEGE GRADUATE PREFERRED—for position in compounding section of progressive manufacturer, producing tires and tubes. Previous experience desirable, but not required. Plant located in Mid-Atlantic area. Complete history of qualifications should be included in letter of application. Address Box No. 111, care of INDIA RUBBER WORLD.

MECHANICAL ENGINEER WANTED BY SMALL rubber plant in Pennsylvania. Permanent position for experienced man willing to help on maintenance. Knowledge of molding essential. Present production on high priority. Address Box No. 113, care of INDIA RUBBER WORLD.

A SMALL, WELL-ESTABLISHED AND FINANCIALLY sound rubber company located in the East has opening for Rubber Chemist and Compounder. Must be able to take complete charge of production. Good opportunity and salary for the right man. In replying give full details, experience, salary desired, etc. Address Box No. 115, care of INDIA RUBBER WORLD.

RUBBER CHEMIST AND FACTORY SUPERINTENDENT TO take charge of rubber plant in New York area. Capable of compounding rubber and synthetics and handling the production of about 50 employes. State age, salary, experience, and all other qualifications. Address Box No. 116, care of INDIA RUBBER WORLD.

WANTED: MAN FAMILIAR WITH COMPOUNDING, MILLING, and particularly calendering operations involving synthetic resins by progressive firm in Middle Atlantic area. Great opportunity for qualified man to organize and direct a new department of an old-established leather company. Write giving full details of training, experience, and salary expected. Address Box No. 122, care of INDIA RUBBER WORLD.

LABORATORY MAN, LOS ANGELES AREA, WITH MECHANICAL goods manufacturing experience. Rubber and all synthetics. Able to read and interpret specifications and run complete tests. 30-year-old-company, permanent postwar employment. Write full details first letter. Address Box No. 123, care of INDIA RUBBER WORLD.

MILLWRIGHT OR MASTER MECHANIC WANTED, TO SUPERVISE small gang, plan machinery layouts, installations, and building construction. Must be willing to do physical work. Permanent position. Plenty of overtime. Needed at once by manufacturer located few miles from Boston. Experience with rubber machinery preferable, but not essential. Salary to be arranged. Address Box No. 124, care of INDIA RUBBER WORLD.

RUBBER CHEMIST—TECHNICAL EDUCATION AND EXPERIENCE in mechanical goods desirable to work in large eastern laboratory on compound development and customers' problems. Native Californian or one who is familiar with this territory desired. In replying give full particulars as to experience, etc. Address Box No. 127, care of INDIA RUBBER WORLD.

SITUATIONS OPEN (Continued)

RUBBER CHEMIST EXPERIENCED IN THE MECHANICAL goods line, mainly for the automobile and like trade. Must be capable of taking charge of laboratory, compounding, and mixing functions. Plant will be located in a small town in Michigan. Write experience, age, salary expected, etc., to Box No. 118, care of INDIA RUBBER WORLD.

WANTED: FACTORY MANAGER FOR SMALL PLASTIC FACTORY, with thorough knowledge of compounds and manufacturing plastic hospital sheeting, baby pants, aprons, elastic, etc. Give salary wanted, past experience, items manufactured and references. Replies strictly confidential. Address Box No. 128, care of INDIA RUBBER WORLD.

CHEMIST: EXPERIENCED IN ALL PHASES OF COMPOUNDING molded rubber goods and sponge rubber products, using both natural and synthetic rubber. Excellent opportunity for advancement with small progressive company located in the Midwest. Address Box No. 133, care of INDIA RUBBER WORLD.

PRESSROOM FOREMAN—SMALL PLANT—EXCELLENT POSTWAR opportunity—located Eastern Pennsylvania. State full particulars in first letter. Address Box No. 136, care of INDIA RUBBER WORLD.

SITUATIONS WANTED

SALES EXECUTIVE—NOW ENGAGED IN THE BUILDING OF A national sales organization for rubber manufacturer. Desires change to a progressive medium-sized manufacturer of molded and extruded rubber goods; desirous of building a substantial postwar market. Address Box No. 119, care of INDIA RUBBER WORLD.

EXECUTIVE MECHANICAL ENGINEER—19 YEARS' EXPERIENCE in Rubber and Plastics. Thoroughly conversant with Production, Engineering, as well as Management and Labor problems. Expert on heavy machinery, such as Banburys, Mills, Calenders, Presses, etc. Now employed in Wire Plant. Minimum salary $8,000; location immaterial. Address Box No. 120, care of INDIA RUBBER WORLD.

MANUFACTURING EXECUTIVE PARTICULARLY experienced in the fields of Organization and Top Management. Background of Engineering and Accounting. Age 42. Now and for past five years a partner of Leading Management Engineering Firm. Thirteen years' Rubber Manufacturing Experience U. S. A. and Great Britain. Available June 1st. Address Box No. 125, care of INDIA RUBBER WORLD.

FACTORY MANAGER, CHEMICAL ENGINEER WITH OVER twenty years' experience in all Factory operations necessary in the Manufacture of Drug Sundries, Sponge, Ebonite, Mechanical Goods, both molded and extruded. Latest synthetic compounding and processing knowledge. Address Box No. 130, care of INDIA RUBBER WORLD.

CHEMICAL ENGINEER — EXECUTIVE — 42 — FAMILY — Chemical Engineering background — molding — rubber goods—Production, Organization, and Management responsibilities; qualified to manage fully. Employed at present. Can accept suitable proposition after 30 days. Address Box No. 132, care of INDIA RUBBER WORLD.

AIR BAG BUFFING MACHINERY
STOCK SHELLS **HOSE POLES**
MANDRELS

NATIONAL SHERARDIZING & MACHINE CO.
868 WINDSOR ST. **HARTFORD, CONN.**
Representatives
Akron **San Francisco** **New York**

ENERPRENE
A Non-Rubber Cement for Bonding Synthetic Rubber to Metal, etc.

THE ENERPRENE COMPANY
1910 First Central Tower **Akron, Ohio**

(Classified Advertisements Continued on Page 246)

TIRE MOLDS

AND MOLDS FOR RUBBER SPECIALTIES AND MECHANICAL GOODS

machined in a large modern shop at low prices by specialists in the field. We also build special machinery to your drawings.

Submit inquiries for low quotations.

THE AKRON EQUIPMENT CO.
AKRON - OHIO

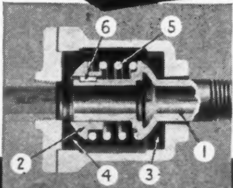
Finding new uses every day–

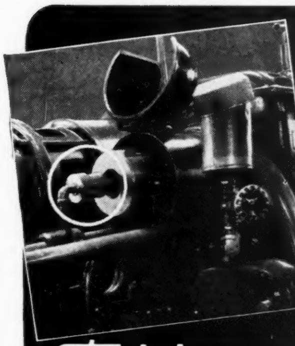
● Shown below is one of the latest applications of the Johnson Joint — on a turret lathe. It admits coolant or cutting oil into the hollow spindle—makes it possible to provide coolant directly behind cutting tools when machining inside surfaces of internally bored castings.

Industry is constantly finding new uses for this packless stuffing box—in paper and textile mills, steel rolling mills, synthetic rubber plants—wherever steam or liquids must be admitted to rotating machine parts. We will be pleased to help you investigate its possibilities for your problems.

Write for Information

JOHNSON Rotary Pressure JOINTS





PACKLESS. Pressure fills housing through sliding fit between nipple (1) and collar (2), keyed together (6) - forces seal ring (3) tightly against nipple.

SELF-OILING. Carbon graphite seal and bearing rings (4) need no oiling.

SELF-ADJUSTING. Joint is pressure sealed; spring (5) is for initial seating.

SELF-ALIGNING. Unique design permits both angular and lateral movement.

The Johnson Corporation
869 WOOD STREET THREE RIVERS, MICH.

FOR HEAVY-DUTY BEARINGS

Photo courtesy Kirkhill Rubber Co.

OLDS BEARING BRONZE is a true alloy with a uniform distribution of lead through the mass in a vehicle of tough, dense, nickel bronze. The composition and fabrication of OLDS BEARING BRONZE makes it highly resistant to vibration and shock under extreme operating conditions. Experience on rubber mills, mining and milling equipment, cranes, steam shovels and in forge and paper plants proves that OLDS BEARING BRONZE gives longer life and reduces shut down time.

PHYSICAL SPECIFICATIONS

Tensile Strength—22,000 psi

Tensile Yield Strength at.35% set—16,000 psi

Compression Yield Strength at.35% set—17,000 psi

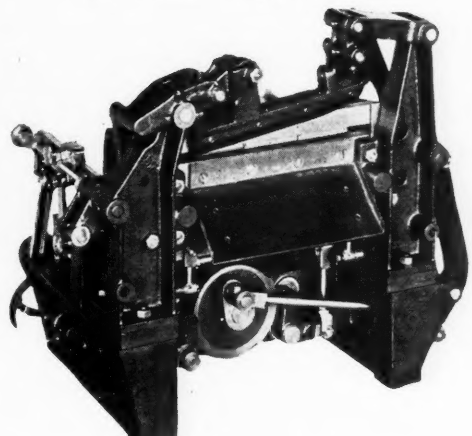
Elongation in 2" 3%

OLDS ALLOYS Company
8686 Rheem Ave., Southgate, Calif.
Suburb of Los Angeles

METALS

Write for Bulletin giving specifications and stock sizes.

Automatic Feeding and Cutting Machine Type "HP"



Will handle light gauge materials rigid enough to permit a push feed. Feed adjustable from 1/8" to 14". Sheets or strips can be cut at a rate of 30 to 80 cuts per minute. Machines from 9" to 100" in width.

SPADONE MACHINE COMPANY
10 East 43rd St. New York 17, N. Y.

Representatives for ALFA MACHINE COMPANY

—NEW— **MACHINERY** —USED—

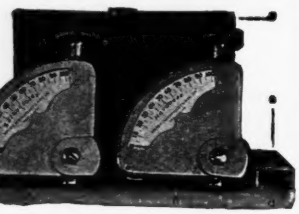
RUBBER MILL INDUSTRY
OUR NEW MACHINES
MIXERS — MILLS — CUTTERS — SAFETY BRAKES
SUSAN GRINDERS — TRIMMERS — LIFT TABLES — HYDRAULIC PRESSES
OUR FIVE POINT REBUILDING PROCESS
1—INSPECTION 2—DISASSEMBLY
3—REBUILDING
4—MODERNIZING 5—GUARANTEE

A A

L. ALBERT and SON
TRENTON, N. J. AKRON, OHIO
LOS ANGELES, CAL. STOUGHTON, MASS.

An International Standard of Measurement for—
Hardness • Elasticity • Plasticity of Rubber, etc.

Is the DUROMETER and ELASTOMETER (23rd year)



These are all factors vital in the selection of raw material and the control of your processes to attain the required modern Standards of Quality in the Finished Product. Universally adopted.

It is economic extravagance to be without these instruments. Used free handed in any position or on Bench Stands, convenient, instant registrations, foolproof. *Ask for our Descriptive Bulletins, and Price List R-4 and R-5.*

THE SHORE INSTRUMENT & MFG. CO.
Van Wyck Ave. and Carll St., JAMAICA, NEW YORK
Agents in all foreign countries.

New Rubber Spreaders
Churns, Pony Mixers
Saturators

Used – Rebuilt –
Rubber – Chemical and
Paint Machinery

LAWRENCE N. BARRY
41 Locust Street Medford, Mass.

SPECIALIZING IN
USED MACHINERY FOR THE **RUBBER**
AND ALLIED INDUSTRIES
MILLS, CALENDERS, HYDRAULIC PRESSES,
TUBERS, VULCANIZERS, MIXERS, ETC.
ERIC BONWITT AKRON 8, OHIO

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: NEVER USED Cleveland Speed Reducer, 139 H.P. ratio 8 to 1. Tubers 3¼" to 6". 3—30" x 24" Hydraulic Presses, 12" rams. 4—W. & P. Mixers, up to 625-gallon capacity; 10—High Pressure Hydraulic Pumps, Accumulators up to 6,000 GMP. Dry Mixers, Grinders, Pulverizers, etc. Send for complete list. Consolidated Products Company, Inc., 13-16 Park Row, New York 5, N. Y.

FOR SALE: H.P.M.C. Press, 318 tons, 18" ram, 30" daylight with 7 steel platens 26" x 44", 2½" thick, complete with valves, piping, oil reservoir, temperature control, and flexible platen hose; operated by 37 G.P.M. pump for quick closing and 1½ G.P.M. pump with hand-wheel control to maintain holding pressure 750# to 3,000#; press is complete for immediate operation. Several 150 gal. W. P. mastadon and other-type mixers. Two new 1½" 3,000# hydraulic Bellfield valves. One 8-cylinder hydraulic pump, capacity 250 C.I.P.M. with hand-wheel control to maintain holding pressure 0 to 3,000#; manufactured by New York Air Brake Co.; new in original crate. 500# No. 7046 Rezyl. 450# Melmac S-72. Write Box No. 117, care of INDIA RUBBER WORLD.

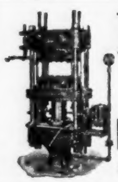
MACHINERY AND SUPPLIES WANTED

WANTED: ONE #2 ROYLE PERFECTED TUBER, LATE MODEL complete with drive; must be in first-class condition. Address Box No. 114, care of INDIA RUBBER WORLD.

WANTED: THREE-ROLL, LABORATORY CALENDER, IN GOOD condition, preferably with direct current motor and control. Address Box No. 121, care of INDIA RUBBER WORLD.

WANTED: COMPLETE RUBBER PLANT EQUIPMENT, INCLUDing Mills, Presses, Pumps, W.&P. or Banbury Mixers, Screens, etc. Send complete description, location, and prices. Address Box No. 126, care of INDIA RUBBER WORLD.

WISH TO PURCHASE HYDRAULIC PRESSES, INJECTION Molding Machines, Mixers, Mills, Pumps, Vulcanizers, Calenders, Banbury Mixers. No dealers. Address Box No. 137, care of INDIA RUBBER WORLD.



PLASTICS **MOLDING PRESSES**
Plain or Semi-automatic—Any Size or pressure — Pumps, Valves, etc.
Dunning & Boschert Press Co., Inc.
336 W. WATER ST. SYRACUSE, N. Y.

GUARANTEED REBUILT MACHINERY
IMMEDIATE DELIVERIES FROM STOCK
MILLS, CALENDERS, TUBERS HYD. PRESSES, PUMPS, MIXERS
VULCANIZERS, ACCUMULATORS CUTTING MACHINES, PULVERIZERS
UNITED RUBBER MACHINERY EXCHANGE
319-323 FRELINGHUYSEN AVE. CABLE "URME" NEWARK, N. J

(*Classified Advertisements Continued on Page 248*)

Top-Quality that never varies!

THE GENERAL TIRE & RUBBER COMPANY
AKRON, OHIO

WABASH, IND. • HUNTINGTON, W. VA. • WACO, TEXAS
BAYTOWN, TEXAS • BARNESVILLE, GA. • PASADENA, CAL.

Associated Factories:

CANADA • MEXICO • VENEZUELA • CHILE • PORTUGAL

Stamford Neophax Vulcanized Oil

(Reg. U. S. Pat. Off.)

For Use with Neoprene

THE STAMFORD RUBBER SUPPLY CO. STAMFORD CONN.

Makers of Stamford "Factice" Vulcanized Oil
(Reg. U. S. Pat. Off.)
SINCE 1900

BROCKTON TOOL COMPANY

Central Street — QUALITY MOULDS FOR ALL PURPOSES — South Easton, Mass.

THE FIRST STEP — A QUALITY MOULD

GRANULATED CORK

FOR EXTENDING RUBBER

SOUTHLAND CORK COMPANY
P. O. BOX 868 NORFOLK, VA.

GROUND BARYTES

PROMPT SHIPMENT

CLINCHFIELD SAND & FELDSPAR CORP.
618 Mercantile Trust Bldg.
Baltimore 2, Md.

QUALITY **INTEGRITY** **SERVICE**

64 YEARS WITHOUT REORGANIZATION

BELTING
Transmission—Conveyor—Elevator

HOSE
for every purpose
Water—Fire—Air—Steam

HOME RUBBER CO. TRENTON, N. J. STEAM NEVER BURN BLOW OUT PACKING CHICAGO NEW YORK

PACKING
Sheet & Rod Packings
for every condition

Mechanical Specialties of Every Description

HOME RUBBER COMPANY

Factory & Main Office
TRENTON 5, N. J.

LONDON: 107 Clifton St., Finsbury — CHICAGO: 168 North Clinton St. — NEW YORK: 80-82 Reade St.

Carey

MAGNESIA

OXIDES AND CARBONATES LIGHT AND HEAVY • FOR TECHNICAL & DRUG USES

THE PHILIP CAREY MFG. COMPANY

BRANCHES IN ALL PRINCIPAL CITIES

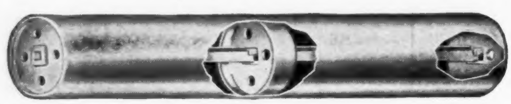
Lockland, CINCINNATI 15, OHIO

Wm. S. GRAY & CO. DISTRIBUTORS NEW YORK CITY

NEW AND BETTER GAMMETER'S

ALL STEEL ALL WELDED

CALENDER STOCK SHELL



4", 5", 6", 8", 10", 12" diameters, any length.
Besides our well known Standard and Heavy Duty Constructions, we can supply light weight drums made up to suit your needs.

THE W. F. GAMMETER COMPANY
CADIZ, OHIO

The H. O. Canfield Co.

MANUFACTURE

Molded Specialties, Plumbers' Rubber Goods, Valves, Gaskets, Hose Washers, and Cut Washers of all kinds

Write for prices and samples

Offices and Works Bridgeport, Conn.
Chicago Office: 424 North Wood Street

FINELY PULVERIZED—BRILLIANT

COLORS
for RUBBER

Chicago Representative FRED L. BROOKE 228 N. La Salle St.
Pacific Coast Representative MARSHALL DILL San Francisco
Cleveland, PALMER-SCHUSTER CO., 975-981 Front St.

Manufactured by
BROOKLYN COLOR WORKS, Inc.
Morgan and Norman Aves. Brooklyn 22, N. Y.

Classified Advertisements
Continued

BUSINESS OPPORTUNITIES

INTERESTED IN BUYING A RUBBER PROCESSING PLANT. Machinery should include extruders, mixing mills, calender, and hydraulic presses. Within radius of 50 miles of New York. I am prepared to pay cash. Address Box No. 112, care of INDIA RUBBER WORLD.

RECORD MANUFACTURING CONSULTANTS
EQUIPMENT, MATERIALS & SUPPLIES
POINSETTIA, INC., 102 CEDAR AVE., PITMAN, N. J.

WANTED: SMALL RUBBER PLANT WITH MILLS, PRESSES, tuber or calender. Will lease or buy outright. Address Box No. 129, care of INDIA RUBBER WORLD.

WANTED TO PURCHASE FOR CASH — Complete assets, Capital Stock of Rubber Manufacturing Firms, or Machinery Manufacturers, or Industrial Plants. Your every confidence is held—all Personnel retained if possible. Investigate the possibility of Tax Benefits under existing conditions in selling going concerns. Substantial Capital available—prefer purchases of over $100,000.00. Address Box No. 131, care of INDIA RUBBER WORLD.

WANTED TO BUY: SMALL RUBBER PLANT, WITH MILLS AND Calender, preferably New England area. Will pay cash. Address Box No. 134, care of INDIA RUBBER WORLD.

WANTED TO BUY: GOING CONCERN MAKING MOLDED RUBber goods. East preferred. Give details in first letter—principals only. Address Box No. 135, care of INDIA RUBBER WORLD.

Realize Large Tax Benefits

LONG ESTABLISHED, REPUTABLE CONCERN with SUBSTANTIAL CAPITAL

WILL BUY FOR CASH

Assets, Capital Stock, Family Holdings of

INDUSTRIAL PLANTS, MFG. DIVISIONS, UNITS

We are Principals, and act only in strictest confidence, retaining personnel wherever possible. Address

BOX 1220, 1474 BROADWAY, NEW YORK CITY

"DIAMOND" SWING JOINTS

Standard in the Rubber Industry 20 Years

For Straight Steam or Alternating Steam and Cold Water

STYLE SW

1—Bronze Swivel. 2—Long Life Molded Gasket. 3—Bronze Follower Ring. 4—Two-Part Bronze Housing. 5—Deep-cut Threads. 6—Tension Spring.

Simple rugged construction for long life and dependable leak-proof service.

Sizes 3/8" to 1 1/2" shipped from stock . . . Write for Bulletin.

DIAMOND METAL PRODUCTS CO.
406 Market St. St. Louis 2, Mo.

Scott Testers offer sure control

Use world-standard *Scott Testers at your essential Control Points of research, purchasing, manufacture and final inspection. Our 60 models fill requirements from one gram to one ton for tensile, hysteresis, burst, flexing, adhesion, state-of-cure, plasticity, compression-cutting, etc., etc.

SCOTT TESTERS

*Registered Trademark

SCOTT TESTERS, INC. 90 BLACKSTONE STREET PROVIDENCE, R. I.

Eagle-Picher

PIGMENTS FOR THE RUBBER INDUSTRY

Red Lead (95%·97%·98%)
Sublimed Litharge
Litharge
Sublimed Blue Lead
Sublimed White Lead
Basic White Lead Silicate
Basic Carbonate of White Lead

• The above products are among the comprehensive line of zinc and lead pigments manufactured by The Eagle-Picher Lead Company for the rubber, paint and other process industries. Eagle-Picher research facilities are available to manufacturers on request. Write for free samples and literature.

EAGLE Since EP 1843 PICHER

THE EAGLE-PICHER LEAD COMPANY
General Offices: Cincinnati (1), Ohio

COLORS for RUBBER

Red Iron Oxides
Green Chromium Oxides
Green Chromium Hydroxides

Reinforcing Fillers and Inerts

C. K. WILLIAMS & CO.
EASTON, PA.

CONTINENTAL-MEXICAN RUBBER CO., Inc.

745 Fifth Ave., New York City

Producer in Mexico of

GUAYULE RUBBER

Washed — AMPAR BRAND — Dried

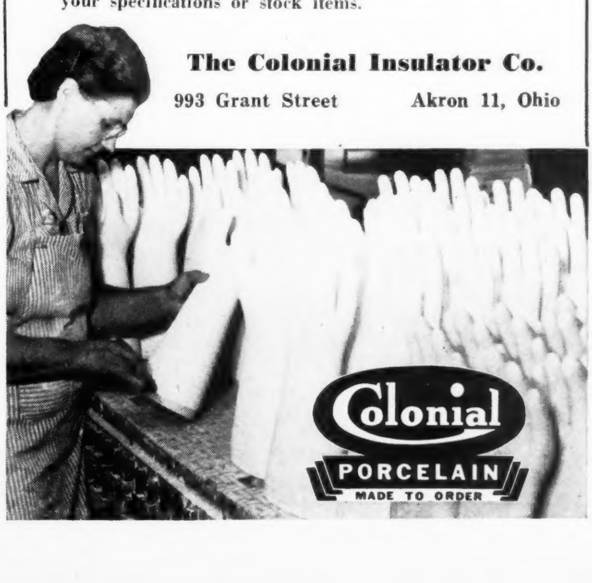
Formerly Distributed By
CONTINENTAL RUBBER CO. OF NEW YORK
An Affiliated Company

Porcelain GLOVE FORMS

— for dipped rubber gloves, including household, industrial, linemen's or electricians' and surgeons' gloves. Some are made from our own stock molds and others from customers' molds.

Write today for our new catalog covering rubber glove and other forms for dipped rubber goods. Prompt attention given to requests for quotations based on your specifications or stock items.

The Colonial Insulator Co.
993 Grant Street Akron 11, Ohio



HARCHEM

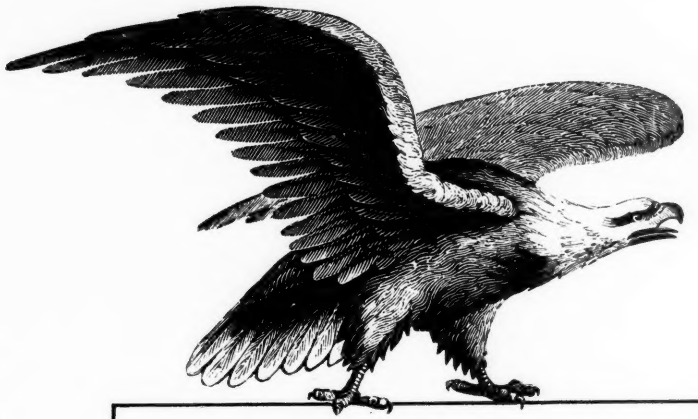
PLASTICIZERS

Alkyl Roleates
Dibutyl Sebacate Capryl Alcohol

HARDESTY CHEMICAL COMPANY, INC.
41 EAST FORTY-SECOND STREET, NEW YORK 17, N.Y.

INDEX TO ADVERTISERS

This index is maintained for the convenience of our readers. It is not a part of the advertisers' contract, and INDIA RUBBER WORLD *assumes no responsibility to advertisers for its correctness.*



Franklin D. Roosevelt

January 30, 1882—April 12, 1945

In tribute to our late President, who died in the service of all mankind, we dedicate this page to his memory.

Let's all remember that our duty today is to fight harder on the home front—fight to a finish—for the ideals he inspired.

One job at hand is to put the Seventh War Loan Drive "over the top." Strengthen America's war effort with all the Bonds you can buy, and keep on buying until total victory is won.

A. Schulman Inc.

Inspecting a liner before processing

Compounding the processing solution

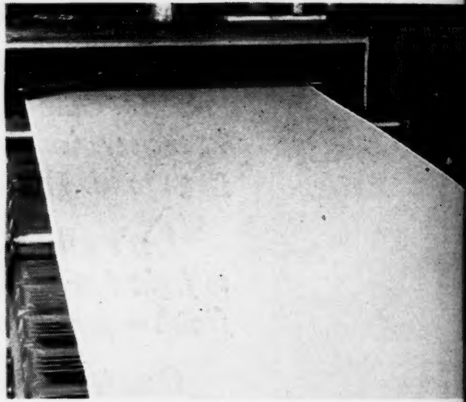
Applying solution to th

CLIMCO

Craftsmanship

Experience and skill feature every step shown here, as your liner goes through our plant for Climco Processing. Many of our employees have been with us for years, and have gained invaluable "know-how" about our processing methods.

Leading rubber companies *prefer* Climco Processing because they have found it rapidly repays its cost by speeding production, plus saving man-hours and money. And many of these firms have *standardized* on Climco Liners because of their unvarying high quality that results from the craftsmanship used in our processing.



Drying the coated liner

THE CLEVELAND LINER & MANUFACTURING CO.
5508 Maurice Avenue • Cleveland 4, Ohio

LINERETTE
INTERLEAVING PAPER
Treatment Contains NO OIL OR WAX
Samples on Request

NEW Booklet

tells how to get better service from your liners. Illustrated with diagrams. Tells how to use liners more efficiently. Write for your copy now.

Controlling the sheet to eliminate wrin

CLIMCO PROCESSED LINE

for Faster, Better Production at Lower Cost